

# ENGR 201

## Lesson 1 WHAT IS A PROFESSION? ---- This is a review

### Ancient

- Profession were absent in the ancient world
- Religious origin to the word profession

### Medieval

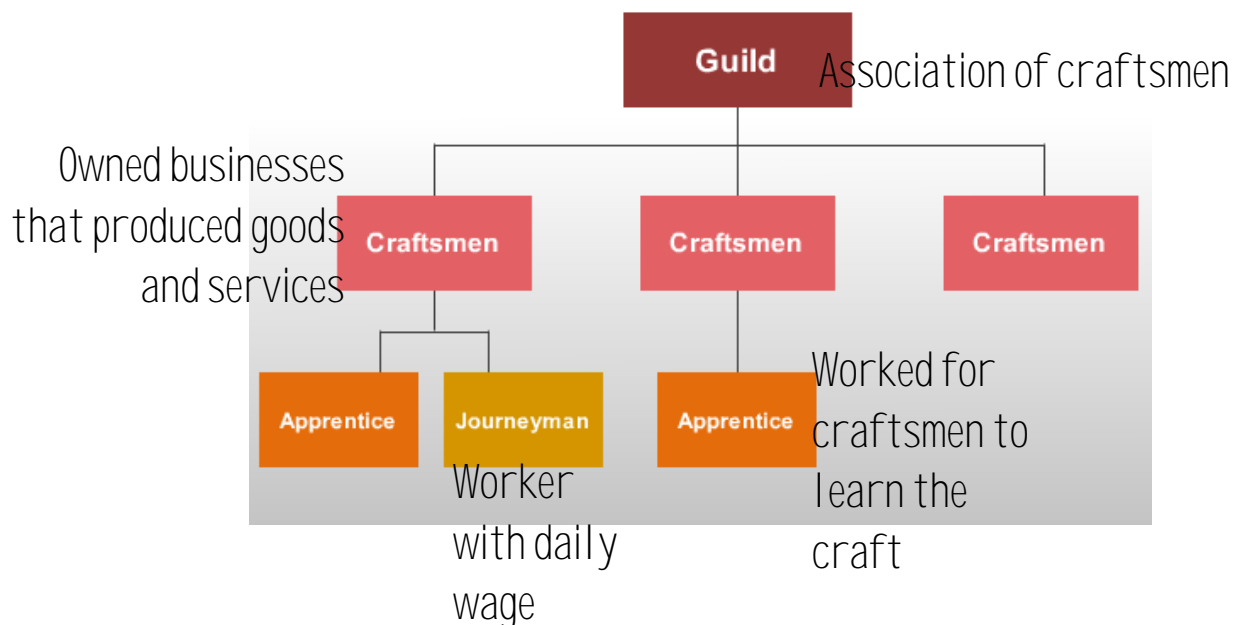
- Profession were of Religious orders Or *Secular Guilds*
- Guilds: exclusive org. created to preserve rights and privileges of membership. Guild associations received authority from kings, city hall or Clergy
- Two types: 1. Merchant Guild - protect traders 2. Craft Guilds - Craftsmen involved in same profession.
- Operated during extreme inequality between peasant and landlords and restricted movement
- Guild provided a means of upward movement in status/wealth
- Functions:

#### Responsibilities:

- Restricted poor workmanship
- Forbade Advertising
- Regulated prices
- Exerted monopoly control
- Limited number of masters

#### Services

- Gave some health insurance to members
- Supported dependents of members in case of death
- Made donations to city
- Served as councillors
- Constructed public buildings



Modern

Shift from the era of manufacturing-based production

- Business Entrepreneur: -Owns a business – Generates revenue from stock of human, financial or physical cap.
- White collar – Salaried with high wages – Administrative or tech work – Risk of obsolescence
- Blue Collar – Manual labour, low skill, earn hourly wages, risk of technological obsolescence.

## Attributes of Modern Professionals

Modern professionals share four main attributes.

4 attributes are:

- Intellectual skills that are acquired through a formalized system of education or training
  - Judgment on matters connected with the practice of work
  - Membership in self-governing societies
  - Their practice of work contributes directly to advance public welfare
- 

- Independent professionals work independently and are paid directly by the client for the service provided by the professional. Much greater autonomy in their actions.
  - An employed professional hired by a company or organization. In return for a monthly salary, the professional provides their services to their employer. Much less autonomy in their actions.
- 

## Professional System

- First, most professional systems have formal rules (sometimes laws) that govern the actions of individual professionals.
  - Second, professionals become members of a profession when they receive a license to practice the profession.
  - Third, breaking formal rules can result in penalties and depending on the nature of violation even loss of license.
- 

## Need for a Professional System Values

- First, professional values are those that guide the nature of professional relations with clients, employers, and fellow professionals. **Honesty, integrity, loyalty and responsibility.**
- A second aspect of professional values relate to societal leadership that relate to how the professional should relate to the values that underpin a particular society or nation they work within. **Law, prejudice, and safety.**

## Roles

- First, society values professionals for the skill and expertise they possess in contributing directly to public welfare.
- Second, society values professionals, because their technical expertise can guide important decisions that society can make collectively. Technical expertise is relevant because of the scientific basis that it brings in solving global problems. Alternative to the messiness of decision-making of politicians and political leaders in democracies.

# Lesson 2 PROFESSIONAL SYSTEMS IN QUEBEC

## Difference between Canada and U.S.

		
ENGINEERING PROFESSIONAL ASSOCIATIONS	Statutorily self-regulated	Not governed by a comprehensive legislation Managed by a board constituted with both engineers and non-engineers
PRACTICE OF THE PROFESSION	Closed Need to obtain a professional license Illegal to work as an engineer without the professional license	Possible to do engineering work without an engineering license

## Five Primary Groups that Administer the System

### Professional Tribunal

- Judges who are appointed by the Court of Québec
- Hears appeals on decisions made by disciplinary councils of different orders

### Government of Québec

### Government of Québec (Minister of Justice)

- Reports to the National Assembly (NA) of Québec on the operation of the professional system
- The Minister presents legislations and resolutions regarding the professional system in the NA.

### Professional Tribunal

Minister responsible for the administration of legislation respecting the professions

### Québec Interprofessional Council

- Composed of representatives of all 46 orders
- Advisory body that can be consulted on professional matters

### Office des Professions du Québec

- Ensures that different orders respect their mission
- Advises the government of Québec

### Office des Professions du Québec

### Québec Interprofessional Council

### 46 Professional Orders

### 46 Professional Orders

- Mission of Professional Orders
  - Ensure protection of the public
- Two types of Professionals Orders
- Professions with Reserved Titles & Exclusive Practice (25)
  - OIQ
- Professions with Reserved Titles (21)
  - Order of the professional technologists

## Reason for the Professional System

Based on the principle that professions (in Québec) shall be self-governing, but not completely independent

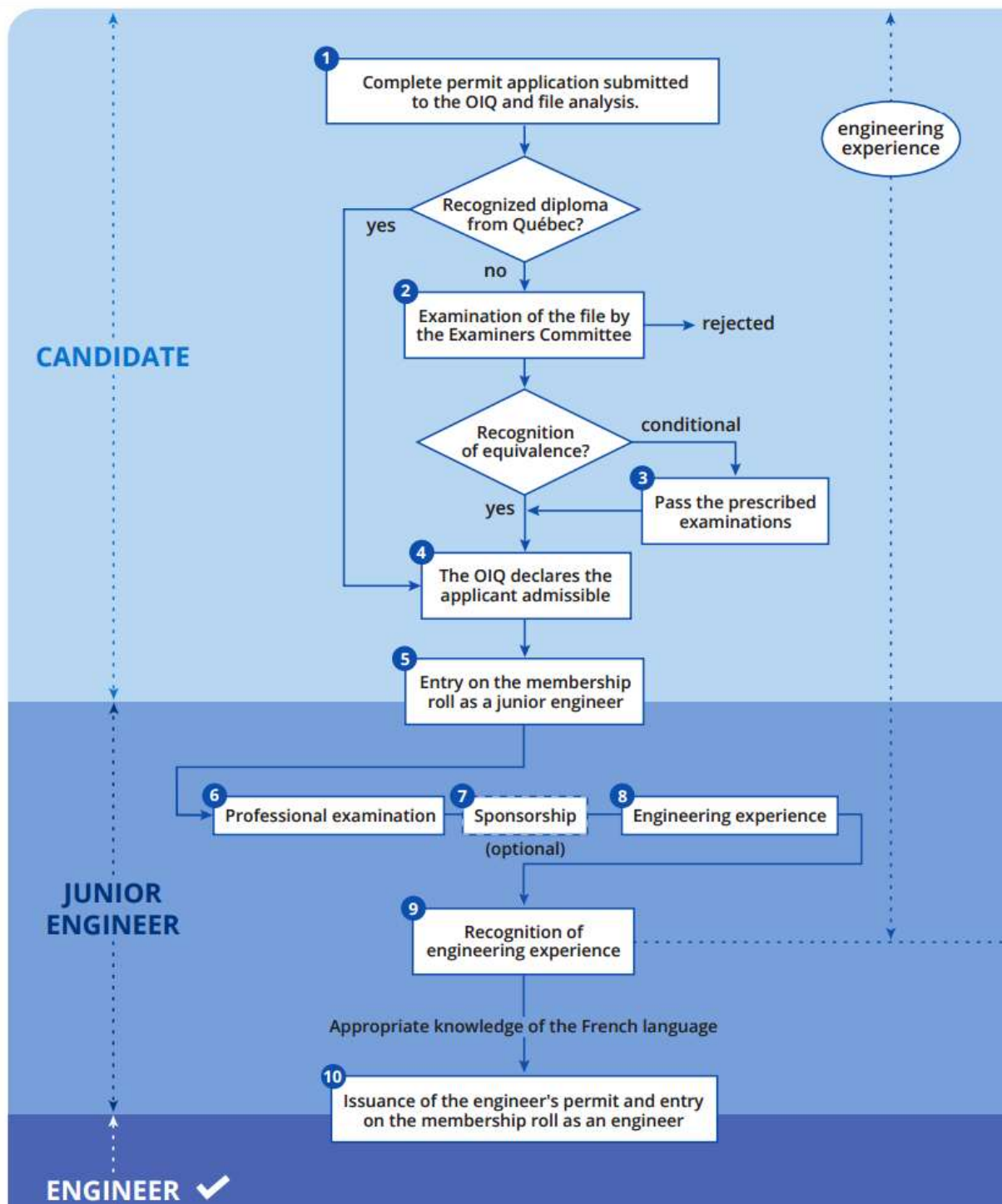
- **Independence:** considerable decision-making autonomy to professional associations
- **Transparency:** regulation of professions is open to public scrutiny
- **Accountability:** professional system is ultimately answerable to government and people of Québec
- Monitoring system allows the government of Québec to exert control

## Operation of the Professional System

- **Creates a Structure of Self-management**
  - Members govern the order by financing, creating professional regulations, and creating functions and roles.
- **Controls practice of profession**
  - Controlling the title and right to practice the profession
  - Verifying competence and integrity for admission
  - Maintenance of professional competence
  - Supervision of professional practice

## Management of Professional Orders

Role	Provided by
Leadership & supervision	Executive Committee
Training & maintaining competence	Training Committee
Verifies individual competence	Inspection Committee
Investigates malpractice	Syndic
Decides on penalties to be awarded	Disciplinary Council



# EVOLUTION OF QUÉBEC'S PROFESSIONAL SYSTEM

## History

- The lack of direct accountability was the product of nonstandardized professional associations, whose mandates were not uniform across the province.
- The acceptance of the "liberal professional". A liberal professional operated with limited oversight and was independent to conduct their professional practice.
- The absence of a strong, legally binding code that governed the conduct of individual professionals.

## Impetus for Change

In 1970, as part of the Quiet Revolution, the Castonguay-Nepveu Commission into the province's health system recommended reorganizing the professional and strengthening the professional system's social contract to ensure the government had a strong supervisory role over the affairs of the system.

In response to these pushes, in 1973, the National Assembly of Québec initiated the reorganization of a new professional system

## The Professional Code:

- Describes the key components of the professional system
- Specifies the actions of different professional orders that are part of the professional system.
- Creates a single law that applies to the entire professional system in the province

## Lesson 3 what are Ethics?

Ethics is a branch of the discipline of philosophy.

Ethics is the systematic analysis of behavioral choices that humans or societies face. The key point is that it is a way of analyzing and thinking about choices.

## What are values?

Values are beliefs or worldviews that define individuals. It defines them because it governs the choices we make, or the behavior we display.

## Need for ethics ?

A simple answer is that ethics are needed to help humans make choices. Given that we need to make choices in our lives, it helps to have a mechanism that can guide how we think, reflect and then justify the choice we make. Ethics provides a means to rationally reason your choices.

## Differentiate between Ethics And Moral s

## Ethics

The key point is that the individual arrives at an understanding of what is an ethical action through a process of philosophically structured thinking and reflection. This process allows an individual to make choices in an objective fashion.

## Objective

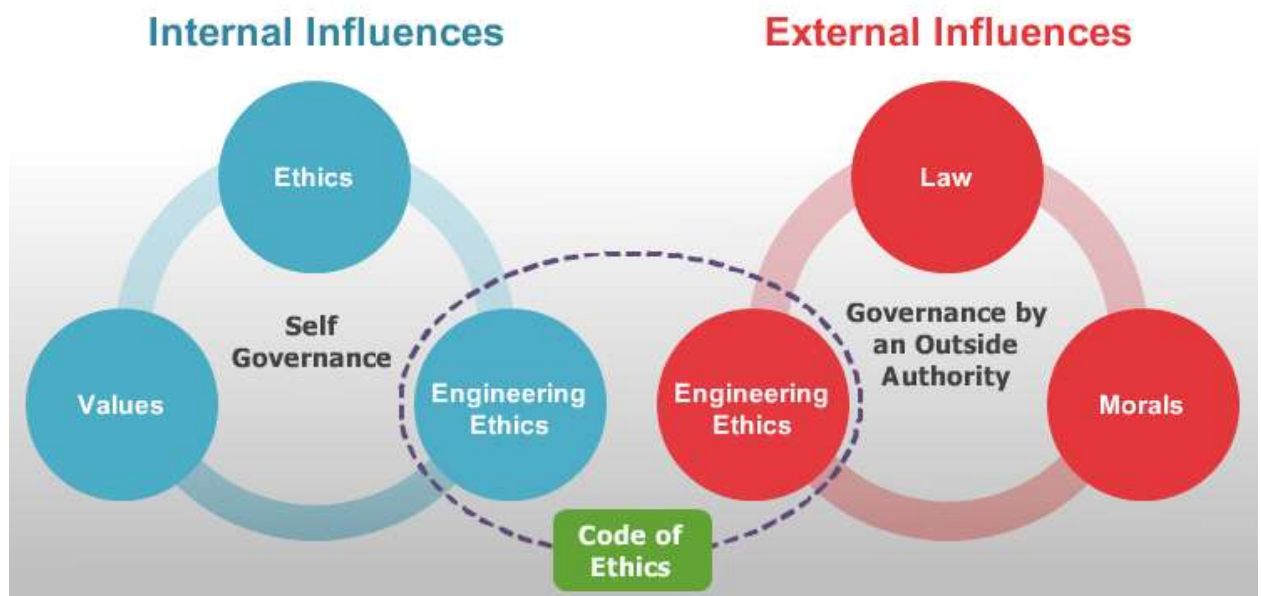
Objective means something that is separate from personal experience. But objectivity of ethical analysis is always qualified by the relevant circumstances that influence the decision

## Morals

Morals are closely related to personal opinion. Why are morals personal opinion? This is because morals are arrived not through a process of reflection, but through a process of classification of right and wrong acts that are dependent on cultural, religious or customary norms.

**While ethics are the systematic analysis of human behavior, morals are customary norms of behavior.**

## Creating Professional Morality



### Ethics is NOT Personal Opinion!

- Ethics is an understanding of the philosophical basis for making moral choices.
- Ethics is an objective system of making choices.
- Objectivity of ethical analysis is qualified by circumstances.
- Example:
  - Do you pardon someone if they kill?
  - If it is in self-defense?

## Values Are the Basis of Ethics!

- Values are beliefs that define individuals.
- Values are the basis of world views and guide behaviour.
- Values govern the choices we make.



# Engineering Ethics

- Is the analysis of decisions, choices and policies that are morally desirable in engineering practice and research
- Purposes:
  - **Moral Awareness:** Awareness of value conflicts that underlie choices
  - **Moral Autonomy:** Ability to think critically and independently about moral issues
  - **Moral Imagination:** Ability to discern alternative solutions to moral dilemmas
  - **Moral Communication:** Ability to communicate ethical issues in a precise and reasonable manner

## OIQ's Code of Ethics for Engineers

- *National Assembly of Québec* requires engineers to adopt a code that would establish rules of conduct for professional practice.
- The Code of Ethics is a mandatory regulation for engineers.
- Engineers have duties and obligations towards:
  - Public
  - Clients (including employees)
  - Profession

## Law

- Laws and regulations are established by competent authorities in a society.
- Laws govern what is allowed, required or forbidden.
- Laws are often based on customs and morals.

## Morals ARE Personal Opinion!

- Is a classification of right or wrong acts
- Based on cultural, religious or customary mores
- Can differ from place, community, region, and country



# What Are Engineering Ethics

Engineering ethics is a form of professional ethics. Engineering ethics can be defined as the analysis of decisions, choices and policies that are morally desirable in engineering practice and research. It is a body of philosophy that indicates how engineers should conduct themselves in their professional capacity

## Why Are Engineering Ethics Important?

Engineering ethics have become important in modern engineering practice for several reasons. One key reason is because the media has highlighted several cases where unethical practice on the part of engineers resulted in decisions that had disastrous consequences for the welfare of the public. In famous cases like the Ford Pinto car, the space shuttle challenger disaster or in the famous walkway collapse in a hotel, engineers were held responsible for their actions. These cases have enhanced the sense of professional responsibility that engineers should have over their work. Furthermore, offices of major industries now consider ethics an important aspect of professional work. The combination of these factors has created an awareness that engineering ethics provides a means to avoid making poor decisions.

## Main Goals of the Study of Engineering Ethics

First, at a basic level, is to develop moral awareness. Moral awareness provides an awareness of value conflicts that underlie choices engineers face in their professional context.

Second is to have moral autonomy. Moral autonomy can be defined as the ability to think critically and independently about moral issues in professional work.

Third is to have moral imagination. Moral imagination is an essential quality to have and can be defined as the ability to discern alternative solutions to moral dilemmas.

Fourth is to develop the ability for moral communication. Moral communication is the ability to communicate ethical issues in a precise and reasonable manner

## Lecture 4

### Ethical reasons

Students are expected to be familiar with

#### **1. Reflecting on choices**

What is the nature of the choice?

The key point is that ethics provides a means to justify in a rational manner the action with take.

An action is ethical if it was made on the basis of an ethical rule.

#### **2. Analyzing choices**

Carefully analyzing the choices shows that you thought through the decision thoroughly and made a choice.

#### **3. Making choice**

Taking the most optimal decision. Our reputation as professional is fragile and we need to preserve it as favourable.

# Ethical Theory – 3 aspects of human behaviour

## Agent

### Virtue theory

"A better guide to ethical action is the character of the person performing it." Aristotle (Focus on person making a choice)

- People seek balanced and virtuous lives
- Character and virtue are immediate guide
- Avoiding extreme choices

## Action

### Deontological Theory

Morality created by following rules, if the actions are wrong but the result is good, it is still considered unethical. (The action)

### DUTY ETHICS

Ethical action arises from following the rules dictated by our conscience.

### WHY IS DUTY ETHICS BAD ?

Because one's conscience may be good for him, but detrimental to the group.

No notion of good of society.

## Result

### Consequentialism

Focus on the hypothetical results to reflect on the ethical content of an action. (The consequence)

### WHY IS IT BAD?

sometimes we don't know all the consequences, what is good or bad.

### Utilitarianism

- max benefit # people affection
- duration of benefit
- intensity of benefit

## Ethical Analysis

Important consequences are at stake so you have to think through your decisions very carefully.

### 1. Identify moral values

Find the values that are connected to the dilemma;  
Common values : honesty, social commitment and responsibility

### 2. Clarify the relevant values for the circumstances

Clarify what aspect of each value is relevant  
Ex: Responsibility, short-term or long-term benefits?  
Listening to your supervisor or thinking about the benefit of organization

### 3. Obtain relevant information

Get the facts, what info do I need to get through research, what is the uncertainty about the information I have. If too much uncertainty, my decision can be to that I need more research to make a conclusive judgement.

### 4. Consider all options

It's not just two extremes!!! There is a spectrum of possibilities – example: more research is required, provincial regulations need to be changed, or whistleblowing.

## 5. Reach a reasonable decision

Make a decision based on previous steps.

Pick the most defensible and justifiable decision.

Defend your decision

# CASE SCENARIO

## Case Scenario

A chemical engineer, working in the environmental division of a computer manufacturing firm, learns that her company might be discharged unlawful amounts of lead and arsenic into the city sewer. The city processes the sludge into a fertilizer used by local farmers. To ensure the safety of both the discharge and the fertilizer, the city imposes restrictive laws on the discharge of lead and arsenic. Preliminary investigations convince the engineer that the company should implement stronger pollution controls; but her supervisor tells her that the cost of doing so is prohibitive and technically the company is in compliance with the law. She is also scheduled to appear before town officials to testify.

What should she do?



## Step 1: Moral Clarity

What are the relevant moral values connected with this case?

OIG's professional values - competence, ethical conduct, responsibility & social commitment

- Competence - to be objective and truthful
- Responsibility to the organization - act as loyal agents
- Social Commitment - commitment to society's welfare



## Step 2: Conceptual Clarity - Examine the Code!

Responsibility to the company:

- Does that mean obeying everything your supervisor tells you?
- Should you think of the long-term benefits or short-term benefits to the company?

Social Commitment:

- Does it mean to all threats that society faces?
- What level of threat is considered serious enough to warrant the disclosure?
- Should you reveal all facts or only what you think is important?



## Step 3: Obtain Relevant Information

Is there uncertainty about the facts?

- Have the findings been re-evaluated by some one else?
- Is there any margin of error?
- What is the possibility of harm coming about to inhabitants?
- Have there been instances in the literature that suggest anything?
- Be thorough in research and documentation!



## Step 4: Consider All Options

What are the options for actions that you can take?

- Is more research required?
- Can the supervisor be convinced?
- Are the regulations too strict?

Action Spectrum



## Step 5: Reach a Reasonable Decision

- Decision should be based on previous steps.
- Look for a "golden mean".
- May not be optimal decision or the decision you want, but under these conditions, it is the most reasonable and defensible one.

Problem Solved!



# 4 branches of philosophy are:

- Ethics: The study of right and wrong, good and evil, obligations and rights, justice, and social and political ideals.
- Logic: The study of the rules of reasoning. For example, under what conditions can an argument be proved true?
- Epistemology: The study of knowledge itself. What is knowledge? Can we know anything? What can we know? What are the sources of knowledge?
- Metaphysics: The study of very basic ideas such as existence, appearance, reality and determinism. Metaphysics asks questions about the most abstract and basic categories of thought: thing, person, property, relation, event, space, time, action, possibility/actuality, and appearance versus reality.

## 4 IMPORTANT ETHICAL THEORIES

### • Mill's utilitarianism

In summary, utilitarianism states that the best course of action in an ethical problem is the solution that produces the maximum benefit for the greatest number of people, with the benefit equally divided among those people.

3 key factors determine the maximum benefit:

- The number of people affected
- The intensity of the benefit involved
- The duration (or, conversely, the severity and duration of the pain avoided).

In evaluating benefits, it is important that we apply certain criteria:

- The benefit to oneself must not have any greater value or importance than the same benefit to anyone else.
- No preference should be given to friends or favoured groups. All benefits should be awarded without regard to race, creed, colour, language, sex, and so on.
- Benefits must be distributed equally. That is, when selecting a course of action, an equal distribution of benefits is preferable to an unequal distribution.

### • Kant's formalism, or duty ethics (or "formalism")

"Every individual has a fundamental duty to act in a correct ethical manner."

The formalist theory contends that, in solving an ethical dilemma, one has a **duty to follow rules that are generated from the conscience** (the categorical imperative) and that if a person strives to develop a **good will, happiness will result**. Many of the rules that support this universal concept are well known-"Be honest," "Be fair," "Do not hurt others," "Keep your promises," "Obey the law," and so on-and not surprisingly, our happiness would certainly increase if everyone followed them.

Inflexible because of the categorical imperative.

### • Locke's rights ethics

Rights-based theory states that every individual has rights, simply by virtue of his or her existence.

And, unfortunately, some people claim "rights" as a cloak for selfishness.

In summary, rights-based ethics has an important place in resolving ethical dilemmas, but the theory is not sufficient to deal with every situation.

### • Aristotle's virtue ethics

Aristotle observed that the quality or goodness of an act, object, or person depended on the function or goal concerned. He postulated that humans would achieve true happiness by developing qualities of character using thought, reason, deduction, and logic. He called these qualities of character "virtues," and he visualized every virtue as a compromise between two extremes or vices.

**TABLE 9.1 — Summary of Four Key Ethical Theories**

	Statement	Conflict
<b>Mill's Utilitarianism</b>	An action is ethically correct if it produces the greatest benefit for the greatest number of people. The duration, intensity, and equality of distribution of the benefits should be considered.	A conflict of interest may arise when evaluating the benefits, or when distributing them equally. Benefits must not favour special groups or personal gain.
<b>Kant's Duty-Based Ethics</b>	Each person has a duty to follow those courses of action that would be acceptable as universal principles for everyone to follow. Human life should be respected, and people should not be used as a means to achieve some other goal.	Conflicts arise when following a universal principle may cause harm. For example, telling a "white" lie is not acceptable, even if telling the truth causes harm.
<b>Locke's Rights-Based Ethics</b>	All individuals are free and equal, and each has a right to life, health, liberty, possessions, and the products of his or her labour.	It is occasionally difficult to determine when one person's rights infringe on another person's rights. Also, people occasionally claim self-serving "rights."
<b>Aristotle's Virtue-Based Ethics</b>	Happiness is achieved by developing virtues, or qualities of character, through deduction and reason. An act is good if it is in accordance with reason. This usually means a course of action that is the golden mean between extremes of excess and deficiency.	The definition of virtue is occasionally vague and difficult to apply in specific cases. However, the concept of seeking a golden mean between two extremes is often useful in ethics.

(Note: We often use the term "dilemma" for problems with more than two possible outcomes.)

In summary, examining a dilemma using the four ethical theories usually gives the right solution. When theories contradict, you must follow the most appropriate theory. This requires a value judgment, and is therefore subjective. The good news is that when a decision follows an orderly process, is consistent with a recognized ethical theory, and is fair, the decision maker has a clear conscience.

# Lecture 5

## Ethics and Organizations





## Organizational Behaviour

Individual Influences

**Ability**

**Natural aptitude**

**Learned capabilities**

## Organizational Behaviour

Individual Influences

**Situational Factors**

**External**

- Economic situation
- Consumer preferences

**Internal**

- Time
- Budget
- Work facilities

## Organizational Behaviour

Group Influences

**Leadership**

**Leader**

advocate for change and new approaches to problems

**Manager**

advocate for stability and the status quo

## Organizational Behaviour

Group Influences

**Leadership**

**Formal Leadership**

Clear authority

**Informal Leadership**

Unofficial power granted by the group

## Organizational Behaviour

Group Influences

**Power & Influence**

<b>Power</b> the ability to influence someone else's behaviours	<b>Authority</b> the right granted by an organization to influence another person
<b>Influence</b> the process of effecting the thoughts and behaviours of another person	<b>Politics</b> the use of power and influence to further (personal) interest - some are acceptable, others are not.

## Organizational Behaviour

Group Influences

**Team Dynamics**

Group of people with complementary skills committed to a common mission, performance goals and approach

## Organizational Behaviour

Group Influences

**Team Dynamics**

**Structure is important!**

- Goals
- Objectives
- Operational guidelines
- Assessment measures
- Role distribution



## Organizational Behaviour

Organizational Influences

Organizational Structure

Types of Organizational Structure

Organizational Culture

## Organizational Behaviour

Organizational Influences

### Organizational Structure

#### Division of Labour

- Coordination
- Communication
- Workflow
- Formal power



#### Elements of Structure:

- Span of control - number of people reporting
- Degree of centralization/decentralization - number of people with decision-making authority
- Degree of formalization - standardization of rules and procedures

## Organizational Behaviour

Organizational Influences

Organizational Structures

Line

Line & Staff

Functional

Divisional

Matrix



- The most hierarchical structure
- Only direct, vertical relationships
- Little horizontal communication

## Organizational Behaviour

Organizational Influences

Organizational Structures

Line

Line & Staff

Functional

Divisional

Matrix



- Creates a parallel chain of line and staff
- The staff provides an advisory role to the line departments.
- Example: the accounting office

## Organizational Behaviour

Organizational Influences

Organizational Structures

Line

Line & Staff

Functional

Divisional

Matrix



- Departmentalization that organizes employees around specific knowledge or resources
- Projects are divided into segments.
- Disadvantages: narrow understanding, poor coordination

## Organizational Behaviour

Organizational Influences

Organizational Structures

Line

Line & Staff

Functional

Divisional

Matrix



- Grouped according to the primary source of environmental uncertainty, such as geographic areas, products, or clients
- Problems: duplication of structures, personnel and resources

## Organizational Behaviour

Organizational Influences

Organizational Structures

Line

Line & Staff

Functional

Divisional

Matrix



# >The Field of Organizational Behavior

**ORGANIZATIONAL BEHAVIOR (OB):**  
the study of what people think, feel, and do in and around organizations

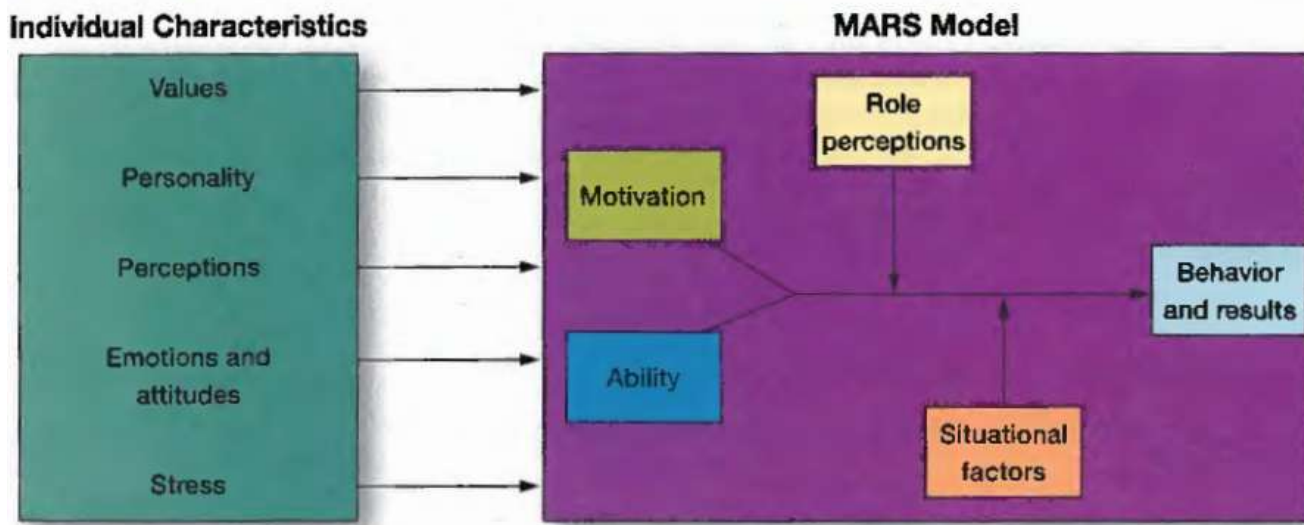
**ORGANIZATIONS:**  
groups of people who work interdependently toward some purpose

## Mars MODEL

performance.<sup>2</sup> One frequently mentioned formula is  $\text{performance} = \text{ability} \times \text{motivation}$ , sometimes known as the “**skill and will**” model. This formula identifies two characteristics within the person that directly influence **behavior** and **performance**. Another popular formula is  $\text{performance} = \text{person} \times \text{situation}$ , where *person* includes individual characteristics, and *situation* represents external influences on the individual’s behavior.

ior and performance: **motivation, ability, role perceptions, and situational factors**. These variables are easily remembered by the acronym “**MARS**.”<sup>4</sup> All four factors are important, so behavior and performance **would be low when any one of them is low**. For example, en-

**[Exhibit 2.1]** MARS Model of Individual Behavior and Results



**MOTIVATION:**  
the forces within a person that affect his or her direction, intensity, and persistence of voluntary behavior

**ABILITY:**  
the natural aptitudes and learned capabilities required to successfully complete a task

give up beforehand. To help remember these three elements of motivation, consider the metaphor of driving a car in which the thrust of the engine is your effort. Direction refers to where you steer the car, intensity is how much you put your foot down on the gas pedal, and persistence is for how long you drive toward that destination.

a task. **Aptitudes** are the natural talents that help employees learn specific tasks more quickly and perform them better. For example, some people have a more natural ability

aptitudes. **Learned capabilities** refer to the skills and knowledge that you have actually acquired. This includes the physical and mental skills you possess as well as the knowledge

## Role perceptions

-First, they understand the specific tasks assigned to them, meaning that they know the specific duties or consequences for which they are accountable.

-Second, they understand the priority of their various tasks and performance

expectations; understanding the priority of quality versus quantity in performing the task.

-The third aspect of role perceptions is understanding the preferred behaviors to accomplish the assigned tasks.

**COMPETENCIES:**  
skills, knowledge, aptitudes, and other personal characteristics that lead to superior performance

formance are bunched together into the concept of **competencies**. The challenge is to match a person's competencies with what each job requires. One strategy is to select applicants whose existing competencies best fit the required tasks. This includes comparing each applicant's competencies with the requirements of the job or work unit. A second approach is to provide training so employees develop required skills and knowledge. Recent evidence suggests that training has a strong influence on organizational performance.<sup>7</sup> The third way to match people with job requirements is to redesign the job so employees are only given tasks within their capabilities.

## Situational factors

Situational factors include conditions beyond the employee's immediate control that constrain or facilitate behavior and performance.

# Organizational Structure

**Division of Labor:** the subdivision of work into separate jobs assigned to different people.

## Coordinating Work Activities:

Coordinating mechanisms are needed to ensure that everyone works in concert. Coordination is so closely connected to division of Labor that the degree of specialization is limited by the feasibility of coordinating that work.

1. Coordination through Informal Communication: Informal communication is a coordinating mechanism in all organizations.
2. Coordination through Formal Hierarchy: Hierarchy assigns legitimate power to individuals, who then use this power to direct work processes and allocate resources. In other words, work is coordinated through direct supervision.
3. Coordination through Standardization: involves creating routine patterns of behavior or output. 'Ib.is coordinating mechanism takes three distinct forms:

**ORGANIZATIONAL STRUCTURE:**  
the division of labor as well as the patterns of coordination, communication, workflow, and formal power that direct organizational activities



1. **Standardized processes:** Quality and consistency of a product or service can often be improved by standardizing work activities through job descriptions and procedures.
2. **Standardized outputs:** ensuring that individuals and work units have clearly defined goals and output measures
3. **Standardized skills:** coordinate work effort by extensively training employees or hiring people who have learned precise role behaviors from educational programs.

## 4 Elements of organizational Structure

1. **Span of Control:** the number of people directly reporting to the next level in the hierarchy.
  - Influence 1: Direct supervision (formal hierarchy) is supplemented with other coordinating mechanisms. (Employees are more self-sufficient, less control load on manager)
  - Influence 2: A wider span of control is possible when employees perform routine jobs, because there is less need for direction or advice from supervisors.
  - Influence 3: the degree of interdependence among employees within the department or team. More supervision is required for highly interdependent jobs because employees tend to experience more conflict with each other

(The conclusion here is that flatter structures offer several benefits (small hierarchy), but cutting out too much management can offset these benefits.)
2. **Centralization and Decentralization:**
  - Centralization means that formal decision-making authority is held by a small group of people, typically those at the top of the organizational hierarchy
  - Decentralize: disperse decision authority and power throughout the organization
3. **Formalization:** the degree to which organizations standardize behavior through rules, procedures, formal training, and related mechanisms. High levels of formalization tend to undermine organizational learning and creativity.
4. **Forms of Departmentalization:**
  - establishes the chain of command; that is, the system of common supervision among positions and units within the organization.
  - focuses people around common mental models or ways of thinking, such as serving clients, developing products, or supporting a particular skill set.
  - encourages coordination through informal communication among people and subunits
  1. **functional:** organizes employees around specific knowledge or other resources  
**DOWN SIDE:** Grouping employees around their skills tends to focus attention on those skills and related professional needs rather than on the company's product/service or client needs.
  2. **divisional:** groups employees around geographic areas, outputs (products/services), or clients.
    - The geographic structure organizes employees around distinct regions of the country or globe
    - The product/service structure organizes work around distinct outputs.
    - The client structure represents the third form of divisional structure, in which employees are organized around specific customer groups.**DOWN SIDE:** Expertise is spread across several autonomous business units, which reduces the ability and perhaps motivation of these people to share their knowledge with counterparts in other divisions
  3. **team-based:** a type of departmentalization built around self-directed teams that complete an entire piece of work. Team structures are highly decentralized because almost all day-to-day decisions are made by team members  
**DOWN SIDE:** costly to maintain due to the need for ongoing interpersonal skills training.
  4. **matrix:** gain the benefits of both a functional structure and a project-based (team) structure.  
**DOWN SIDE:** Employees working at the matrix level have two bosses and, consequently, two sets of priorities that aren't always aligned with each other, existence of two bosses can dilute accountability.

## Mechanistic vs Organic Structures:

**MECHANISTIC STRUCTURE:** an org. structure with a narrow span of control and a high degree of formalization and centralization

**ORGANIC STRUCTURE:** an organizational structure with a wide span of control, little formalization and decentralized decision making. Organic structures are also more compatible with organizational learning, high-performance workplaces, and quality management because they emphasize information sharing and an empowered workforce rather than hierarchy and status.

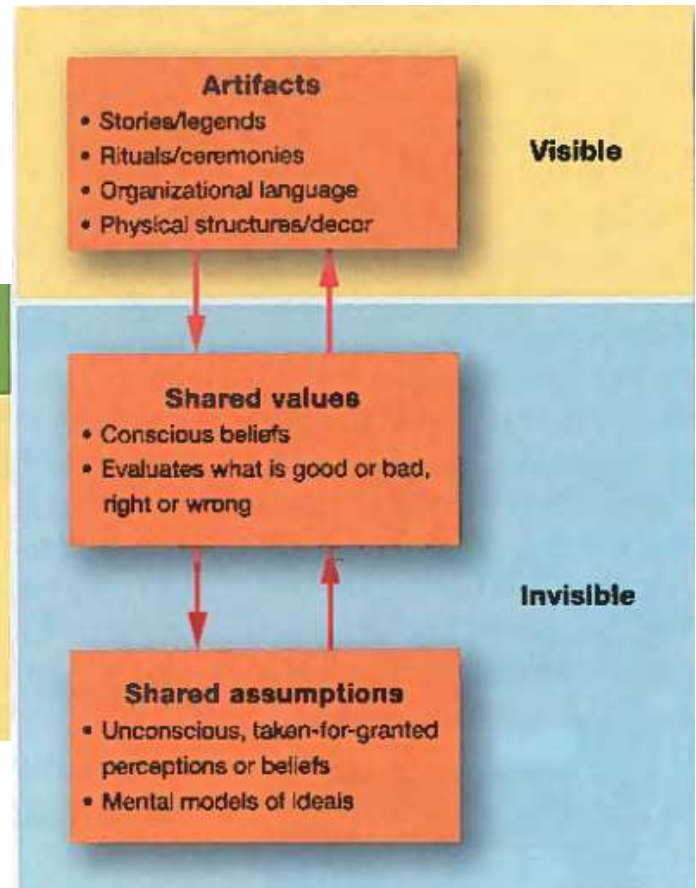
**PROBLEM:** liability of newness; Newness makes start-up firms more organic, but their employees often lack industry experience and their teams have not developed sufficiently for peak performance

# Organizational Culture (set of Values and assumptions)

## Organizational Culture Assumptions, Values, and Artifacts →

### Content of Organizational Culture

Organizational Culture Dimension	Characteristics of the Dimension
Innovation	Experimenting, opportunity seeking, risk taking, few rules, low cautiousness
Stability	Predictability, security, rule-oriented
Respect for people	Fairness, tolerance
Outcome orientation	Action-oriented, high expectations, results-oriented
Attention to detail	Precise, analytic
Team orientation	Collaboration, people-oriented
Aggressiveness	Competitive, low emphasis on social responsibility



## Organizational Subcultures

When discussing organizational culture, we are actually referring to the dominant culture,

However, organizations are also comprised of subcultures located throughout its various divisions, geographic regions, and occupational groups.

Function of subculture:

1. First, they maintain the organization's standards of performance and ethical behavior
2. They are the spawning grounds for emerging values that keep the firm aligned with the needs of customers, suppliers, society, and other stakeholders.

-Countercultures directly oppose the organization's dominant values.

**leadership** :The process of guiding and directing the behavior of people in the work environment  
**formal leadership** Officially sanctioned leader· ship based on the authority of a formal position.  
**informal leadership** Unofficial leadership accorded to a person by other members of the organization.  
**followership** The process of being guided and directed by a leader in the work environment

John Kotter suggests that leadership and management are two distinct, yet complementary systems of action in organizations :

**leader** An advocate for change and new approaches to problems.  
the leadership process involves  
(1) setting a direction for the organization;  
(2) aligning people with that direction through communication; and  
(3) motivating people to action, partly through empowerment and pardy through basic need gratification.

**manager** An advocate for stability and the status quo.  
the management process involves  
(1) planning and budgeting,  
(2) organizing and Staffing, and  
(3) controlling and problem solving.

**Leaders and managers differ along four separate dimensions of personality:**

PERSONALITY DIMENSION	MANAGER	LEADER
Attitudes toward goals	Has an impersonal, passive, functional attitude; believes goals arise out of necessity and reality	Has a personal and active attitude; believes goals arise from desire and imagination
Conceptions of work	Views work as an enabling process that combines people, ideas, and things; seeks moderate risk through coordination and balance	Looks for fresh approaches to old problems; seeks high-risk positions, especially with high payoffs
Relationships with others	Avoids solitary work activity, preferring to work with others; avoids close, intense relationships; avoids conflict	Is comfortable in solitary work activity; encourages close, intense working relationships; is not conflict averse
Sense of self	Is once born; makes a straightforward life adjustment; accepts life as it is	Is twice born; engages in a struggle for a sense of order in life; questions life

**The Ohio State University study:**

**Initiating structure** is leader behavior aimed at defining and organizing work relationships and roles, as well as establishing clear patterns of organization, communication, and ways of getting things done.  
**Consideration** is leader behavior aimed at nurturing friendly, warm working relationships, as well as encouraging mutual trust and interpersonal respect within the work unit.

**The University of Michigan study:**

**A production-oriented** (getting things done) style leads to a work environment characterized by constant influence attempts on the part of the leader, either through direct, close supervision or through the use of many written and unwritten rules and regulations for behavior  
**An employee-oriented** leadership style leads to a work environment that focuses on relationships.

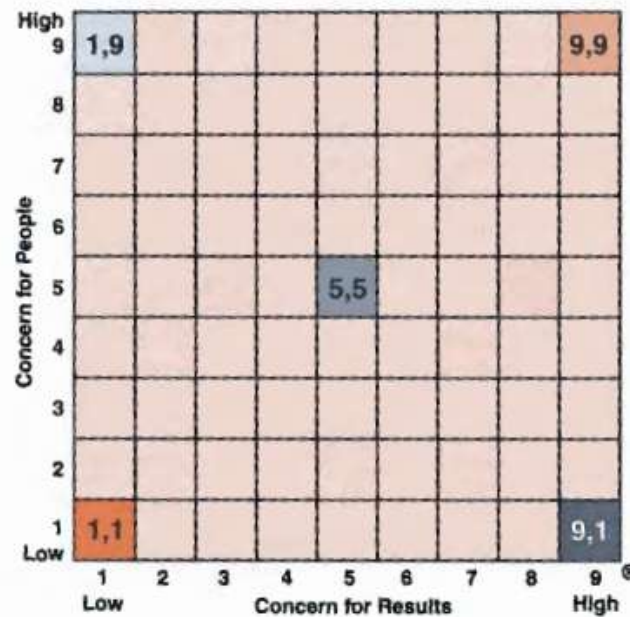
“What the studies have in common is That two basic leadership styles were identified, with one focusing on tasks and one focusing on people.

## leadership Grid

An approach to understanding a leader's or manager's concern for results (production) and concern for people.

**Paternalistic "father knows best" manager (9+9)** A leader who promises reward and threatens punishment.

**Opportunistic "what's in it for me" manager (Opp)** A leader whose style aims to maximize self-benefit.



**1,9 Country Club Management:** Thoughtful attention to the needs of the people for satisfying relationships leads to a comfortable, friendly organization atmosphere and work tempo.

**9,9 Team Management:** Work accomplishment is from committed people; interdependence through a "common stake" in organization purpose leads to relationships of trust and respect.

**5,5 Middle-of-the-Road Management:** Adequate organization performance is possible through balancing the necessity to get work out while maintaining morale of people at a satisfactory level.

**1,1 Impoverished Management:** Exertion of minimum effort to get required work done is appropriate to sustain organization membership.

**9,1 Authority-Compliance Management:** Efficiency in operations results from arranging conditions of work in such a way that human elements interfere to a minimum degree.

## Influences on Professional Loyalty in an Organization

->Leadership Style (the Lewin, Uppitt, and White studies)

1. Autocratic style – leaders adopt directive or controlling actions to enforce rules and activities. This style is particularly effective for tasks that need to be finished urgently. However, long-term reliance on this style can affect the judgment and autonomy of professionals.
2. Democratic style – leaders take collaborative, responsive, and interactive actions with followers. This democratic style allows for the evolution of mutual respect between professionals and co-workers. There is far less pressure to be influenced by organizational priorities.
3. Laissez-faire style – leader who fails to take responsibility of position. As a result, subordinates may have greater freedom, but there is little evolution of a coherent mission in the organization. In the short-term, professionals may face less pressures, but in the long-run will feel under-valued and frustrated.

## ->Organizational Structure

1. Success within an organization arises from not just professional success, but also from knowledge of how the organization is structured. The knowledge of how the organization is structured is crucial for a professional to understand how information and commands flow in an organization.

3. Another important aspect of organizational structure that influences a professional is the decision-making process. Who makes decisions, and how formalized decision-making is in the organization affects how professionals can contribute to decisions.



# LECTURE 6

## 4 Values in professional relationship

### Trust:

- key value underlying a professional relationship
- it is the ability to rely confidently on people, objects and circumstances
- Reliance introduces risk

### Loyalty:

- Attitude or character demonstrated by a person through their actions
- A person puts the interests of a person or institution (family, community or nation) before personal interests, even if such action exposes the person to risk.

### Dignity:

- Feeling of respect or esteem that an individual holds to themselves in

### Honesty:

- A moral virtue that is widely accepted but not very well understood primarily because it is a practice relevant to many different facets of our existence in society.

## **PODCAST (Trust Building and Conflict of Interest)**

### Trust-building Obligations

Measures to build bond of trust (more relevant to independent engineers) : disclosure of limits, integrity and transparency, availability and diligence, independence and impartiality, confidentiality and fees.

#### 1- Disclosure of Limits

- Responsibly disclosing the ability of the engineer, in terms of material resources (equipment, finances, space) or intellectual resources (people, skills) or time resources, the engineer is sending a clear message to the client about their abilities. DO SO WITHOUT BEING RECKLESS (overestimate your abilities) OR A NAY-SAYER (underestimate your abilities)

#### 2- Integrity and Transparency

- At the beginning, of the terms of agreement in writing.
- Documenting all interactions
- Furnishing explanations as and when requested by the client.
- Engineer must inform the client in writing the nature of consequences for ignoring their advice.

#### 3- Availability and Diligence

- making known the engineer's working hours and contacts, and then ensuring the client can reach the engineer during these hours
- the engineer must give advance notice
- Engineer can stop working for a client if the work involves illegal or fraudulent acts, if the client ignores the engineer's advice, and if there is a conflict of interest.

#### 4- Independence and Impartiality

- avoid situations of conflict of interest
- subordinate one's personal interest to the interest of the client
- ensure that the engineer does not receive fees for services provided from anyone else other than the client or the client's representative

## 5- Confidentiality

- Not authorized to share any of the client's information
- The engineer is expected not to use the client's information in a way that will prejudice the client or accept another mandate that will involve disclosing a previous client's information.

## 6- Fees

- An engineer is expected to charge fair and reasonable fees that correspond to the services rendered.
- the client should be given a written explanation for the fees that were charged.

Conflict of interest: the existence of a parallel interest that could threaten or appear to threaten the exercise of good judgment of the typical professional.

Types;

- The professional receives gifts, bribes, or kickbacks in order to influence their decision.
- The insider information for friends or relatives (your brother applying for your company)
- The existence of interests in other companies.

It is unavoidable, a professional's only safeguard is full disclosure of conflict, so that the conflict of interest stands revealed. (Snitch on yourself lol)

Fiduciary relationship: a legal obligation for the professional to always act in the positive interests of the client

## **PODCAST** Nature of Loyalty

Two kinds: (for professionals it is not absolute loyalty, you have to be ethical)

-Attitude loyalty: is loyalty that is considered an attitude or sentiment of a person (Not necessary)

-Agency loyalty: is agency loyalty that arises from fulfilling contractual duties.

• Do I feel a sense of gratitude towards my employer? • Is there a sense of fairness in the workplace? • Is this organization responsive to the needs and concerns of its employees? • Does this organization offer rewards and acknowledgements? • Am I proud of this organization?

## READING (Workplace responsibilities and rights)

2 Conditions that arise conflict of interest:

- 1) The professional is in a relationship or a role that requires exercising good judgment on behalf of the interests of an employer or client.
- 2) The professional has some additional roles or side interests that could threaten good judgement of that professional or the judgment of a typical professional situation.

Difference between conflict of interest and conflicting interests is that conflict of interest is morally wrong.

Gifts & bribes: "If the offer or acceptance of a particular gift could have embarrassing consequences for your company if made public, then do not accept the gift."

Interests In Other Companies;

moonlighting: working in one's spare time for another company; A special kind of conflict of interest arises, however, when moonlighting leaves one exhausted and thereby harms job performance

# LECTURE 7

**Dignity:** feeling of respect or esteem that an individual holds themselves in.

**Professional dignity** is considered a positive sense of esteem that the profession has collectively acquired as result of the positive contributions the profession makes to society. (Fragile)

In Québec, it is a mandatory duty of each individual engineer to safeguard the dignity of the profession. This duty is prescribed in the province's Professional Code and in the Code of Ethics for Engineers.

Maintain proper relations with the Order:

- Demonstrate adequate respect for the Order, and for the role the Order plays in ensuring engineers are accountable to society.
- comply with any request from the Order to participate in the self-governance of the profession
- must agree to contribute voluntarily to the Order
- must reply to any correspondence or letter from the Order as soon as possible.
- Individuals are forbidden to interfere, or otherwise, obstruct a professional inspection or investigation conducted by the Order.
- During such an inspection or investigation, an engineer is required to submit all their professional records (including their computers) for scrutiny

Any member of the profession, through their irresponsible actions can cause damage to the dignity of the profession.

Nature of control OIQ

OIQ exerts control on key aspects – membership, nature of practice, and social accountability.

## Membership

- Crucial to practice the profession
  - required to hold a permit issued by OIQ and their name be entered on OIQ's roll.
1. Ensure registration on the roll every year on April 1st.

Important membership conditions:

2. Not be temporarily or permanently stricken off the roll of OIQ.
3. Ensure that your permit is not revoked by the disciplinary council.
4. Meet important membership conditions for member renewal. These conditions include not having a criminal record outside the profession in Canada or in another country. Another condition is to have completely paid any disciplinary penalties or assessment during the year.

It may also be required to meet physical/mental competencies to continue active professional life.

## Nature of practice

- general inspection
- specialized inspection of a member

Investigation is an internal process that aims to examine if unethical or offending practice was undertaken by a member. Investigations of malpractice are investigated by the Syndic. After concluding the investigation, the Syndic makes their recommendation to the OIQ's disciplinary council. It is the disciplinary council that judges the complaint, hears the member and makes a decision to award penalties; an oral reprimand; removing the member temporarily or permanently from the roll; a fine of \$1,000-\$12,500 with fines doubled for repeat offences; an obligation to remit a sum of money to the entitled person; or restriction or suspension to engage in professional activities.

## Social Accountability

The conciliation or arbitration process; to see if clients are overcharged (for private practise)

# LECTURE 8

## Duties toward the public

The meaning of public refers to the duty of engineers to the citizens of Québec/Canada. But it also uses public in another sense to mean the opposite of private. In that sense, public means the common good of people in Québec.

Two duties :

### Duty to Humanity:

- This duty specifies that, first and foremost, engineers exist to protect and respect humans
- Governed by key legal frameworks in Canadian and Québec law – the Canadian Charter of Rights and Freedoms and the Québec Charter of Human Rights and Freedoms
- Professionals have a duty to not violate the provisions of the Canadian charter and the Québec charter
- No professional may refuse to provide services to a person because of their race, colour, age, sex, religion, national origin or ethnicity of such person.

### Duties towards Life and Environment:

- The first is to act in a manner to safeguard the environment: be mindful of technological choices that do not promote the pollution and eventual destruction of the environment and will further sustainable development
- The second is to be mindful of the life, health, and property of every human: closely related to the rights mentioned in the Canadian charter

## Ethical Constructs

1)Prejudice: An opinion formed without taking time and care to judge fairly, often based on incomplete and stereotyped information.

2)Discrimination: Treating people differently because of some particular attribute such as race, gender or religion  
Adverse effect Discrimination is the discrimination that happens as a result of applying a rule or policy uniformly.

Forms of Discrimination	Systemic Discrimination <i>i</i>	Direct Discrimination <i>i</i>
Issues for Women	Glass Ceiling <i>i</i>	Sexist <i>i</i>
Issues for Aboriginal	Cultural Imperialism <i>i</i>	Racist <i>i</i>
Issues for Disabled	Physical / Attitudinal Barriers <i>i</i>	Insensitive <i>i</i>

Systematic discrimination: is rooted in accepted ways of doing this in a business, profession or occupation.

- Glass ceiling: preventing women from achieving their goals by blocking advances in their careers beyond a point.
- Cultural imperialism: reduced some cultures as secondary to the other more successful widespread cultures
- Physical/Attitudinal Barriers: prevent differently abled from achieving their full potential

Direct discrimination: is directed against a person on the basis of prejudice.

3)Harassment : it occurs when a person is subjected to unwanted discriminatory behaviour that offends, demeans or humiliates : sexual, racial, ridicule.

## PODCAST (Thinking About Inclusivity and Diversity)

### Prejudice, Discrimination, and Harassment:

- Prejudice is a biased opinion that is often based on incomplete information
- Discrimination implies treating people differently because of some particular social attribute, such as race, gender or religion
- harassment occurs when an individual is subjected to unwanted behaviour that offends, demeans, or humiliates.

### Multiculturalism and Diversity:

- Multiculturalism is an equal acceptance for social differences in terms of gender, age, sexual orientation, ethnicity, race or national origin.
- Diversity is the presence of cultural differences in society

It is for these reasons that Canada is considered a cultural mosaic unlike U.S., which has adopted a melting pot approach. Canada, unlike U.S., seeks to foster diversity without assimilating different cultural groups.

### PODCAST Honesty

- Honesty is a moral virtue that is widely accepted but not very well understood, primarily because it is a practice relevant to many different facets of our existence in society.

In the professional context, honesty is not limited to just speaking the truth. It also implies representing oneself, our actions, and our views openly and truthfully. So in addition to honesty being the act of truth telling, it also means that to be honest in the workplace implies the act of following scientific facts, the act of avoiding inappropriate means, and the act of showing respect to colleagues in a professional relationship.

Difference between an act of commission and an act of omission; tell a lie or neglect to tell a fact

### Duty to be Honest:

#### Obligations:

- The engineer shall express their opinion on matters dealing with engineering, only if such opinion is based on sufficient knowledge and honest convictions.
- An engineer must be impartial in their relations between the client and the contractors, suppliers, etc.
- An engineer must safeguard their independence at all times to avoid situations of conflict of interest.

### Whistleblowing:

It has been defined as an act by an employee of informing the public or higher management of unethical or illegal behavior by an employer or supervisor.

Internal: going over the head of an immediate supervisor to higher level of management

External: to media or law enforcement.

1-first verbally

2- clearly indicate in writing to the company the consequences that may result from ignoring your advice

3- when certain works are a danger to public safety, must be to notify the Order.

# LECTURE 9

## PODCAST LAW AND LEGAL SYSTEMS

### Law:

- is a rule that regulates what is accepted or forbidden in a society
- created by a competent authority, such as a parliament or a legislative assembly
- composed of enforcement agencies (example: the police) and the judiciary
- Two broad domains – public law and private law
  - Public laws are those laws that govern the actions of the state (or government) or the relations of the state and individuals.
  - Private law, on the other hand, is solely concerned with regulating the relations and disputes between private individuals.

### Legal Systems

- the system that has built up around the process of implementing laws in a society
- The sources of laws and regulations that govern a society
- The practices and customs followed by courts in interpreting laws to make decisions regarding legal disputes
- And as frameworks that govern interpretation of statutes, legislation and bylaws.

### Major legal system:

#### CIVIL LAW

- First, in a civil law system, laws are written into systematic collections referred to as codes.
- Second, Laws are created by legislatures alone.
- Third, legal decisions made by judges are based solely on applying the laws to the case.
- Finally, justice is produced through an inquisitorial process led by the judge.

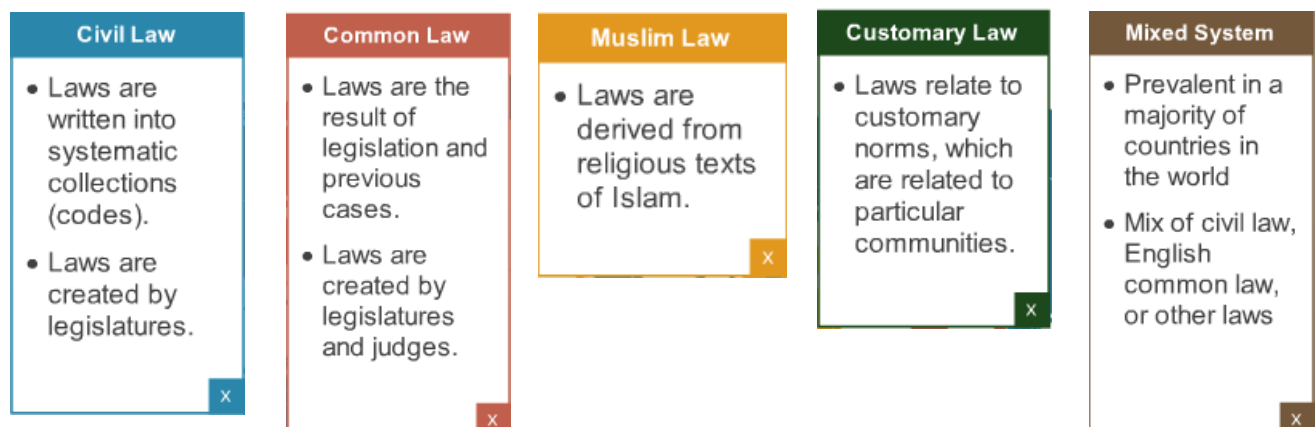
#### ENGLISH COMMON LAW

- English common law, on the other hand, is based on laws and earlier cases that are similar.
- Second, laws are created both by legislatures and judges on the basis of the precedence value of earlier cases and judgments.
- Third, legal decisions are based not only on laws but also on precedence value of previous judgments.
- Finally, justice is produced through an adversarial process between two opposing sets of advocates with the judge acting as a neutral umpire.

#### Québec's Legal System

- mixed legal system because of French history
- In Québec, all criminal matters are decided through English common law, while property and civil matters for disputes between private citizens are based on the Québec Civil Code. Québec Civil Code is derived from French civil law

### LEGAL SYSTEMS of the WORLD



## PODCAST INTELLECTUAL PROPERTY

- . In law, novel ideas are considered intellectual property and, if it meets certain conditions, can acquire the same kinds of protection that other pieces of property like land, money, or houses have.  
Canada recognizes five major types of intellectual property – patents, copyright, trademark, industrial design protection and Integrated Circuit Topographies (ICT) protection.

### Patents

- A Patent is a government grant that gives inventors exclusive rights to their inventions.
- it must be new; must show utility (or in other words, must be working model that is functional and operative, it is not enough to have a concept); and must show inventive ingenuity not obvious to someone with the same skills.
- cannot be granted for a principle, theorem, idea, or computer program
- 20 years protection.

### Copyright

- A copyright protects the expression of information in literary, musical, dramatic, or artistic works. The work must be published, recorded, performed, or communicated in order for the copyright protection to apply.
- One aspect that makes copyright unique is that it does not require registration. All it requires that the author place the copyright symbol © followed by the author's name and year in the work to gain copyright protection.
- the life of the creator plus 50 years following death (protection)

### Trademark

- Ordinary marks are words and/or symbols that distinguish the goods or services of a specific firm (e.g., Dell or MacBook).
- Certification marks identify goods or services that meet a standard set by a governing organization (e.g., Energy Star or LEED certification).
- Distinguishing guise identifies the shaping of wares or their containers, or a mode of wrapping or packaging wares (e.g., iPad).
- The term of protection is 15 years, but it can be renewed indefinitely as long as it is in continuous use.

### Industrial Design Protection

- Industrial design protection protects the shape, configuration, and pattern or ornament (or any combination of these) applied to a finished, mass-produced item.
- The period of protection is 10 years.

### Integrated Circuit Topographies (ICT) Protection

- ICT protection will give you exclusive rights over the copying of the topography and the commercialization of circuits that are contained in the topography.
- Registration grants you exclusive rights for 10 years on your original circuit design.

## PODCAST OCCUPATIONAL HEALTH AND SAFETY

- in practice, over 90% of Canadian workers are governed under provincial legislation. It is only the remaining 10% of the workers working in federal installations and workplaces, such as airports that are governed by federal OHS legislation.

### Key Features

- An important right is the ability to refuse to do unsafe work.
- the right to be informed about actual and potential dangers.
- right is to participate in workplace health and safety activities through Joint Health and Safety Committee (JHSC) as a worker health and safety representative.

Key aspects of supervisor responsibility are:

- To ensure that workers use prescribed protective equipment devices
- To advise workers of potential and actual hazards
- To take every reasonable precaution in the circumstance for the protection of workers



Worker responsibilities include:

- To work in compliance with OHS acts and regulations
- To use personal protective equipment and clothing as directed
- To report hazards and dangers.

**Due diligence** is a legal defence that suggests that all reasonable precautions, under the particular circumstances, were taken. (a defendant is not guilty if they can prove due diligence was exercised.)

## Québec OHS Legislation

Québec OHS legislation called the Act Respecting Occupational Health and Safety (Québec) is a progressive legislation that has all the major features of OHS legislation in Canada.

- the right to refuse unsafe work and participate in Health and Safety Committees
- it places the burden of responsibility on employers or supervisors to ensure safe workplaces
- distinguishes workplaces into “ordinary” workplaces, where workers are not exposed to very dangerous environments, and to “special” workplaces, that have elevated risks of injury. Depending on the nature of the workplace, different measures are needed.

# LECTURE 10

## PODCAST Responsibility

- Responding to or answering for an action performed. All actions that we take have consequences either for ourselves or for other people who surround us.

In order for a person to be held morally responsible for an action, we should be able to determine two aspects.

-First, who did the action?

-Second, we need to know the degree of wilful intent or in other words, the nature of circumstances that guided the action.

A role (especially a social role) is a position that an individual holds.

Individuals are held responsible when they do not meet the expectations of the role they fill in society

## Evolution of Liability

Liability can be defined as the responsibility that is backed by the power of the law.

Liability can be of two types – contractual or extra-contractual.

1. Extra-contractual : responsibility that is owed by tort or regulatory damages
2. Contractual: responsibility that is owed within the bounds of an explicit contract

caveat emptor: let the buyer beware (If a buyer bought a product in the market, it was the buyer who took the risk of buying, and therefore had to bear the price of any damage done while using it)

caveat venditor: let the seller beware

Strict liability is the legal responsibility assigned in the public interest, even in the absence of negligence on the part of the manufacturer. (enforced in the US but not Canada)

- make safe products for the intended user
- consider its effect on all likely uses and users of products.

## PODCAST Liability in Québec

### Liability

- Liability in Québec is enforced through Québec Civil Code
- understood as a civil liability: the responsibility of the guilty party to pay compensation to the plaintiff for damages or harms caused.
- Compensation is awarded only if 3 things are established by the plaintiff:

- First, the plaintiff needs to show that there was an act of omission (a defect or a negligent construction in the product.) in the design or construction of the product.
- Second, the plaintiff has to demonstrate that a consequence or damage took place
- Third and the most vital part is to demonstrate that a cause-effect relation exists between the act of omission and the consequence or damage.

#### Liability Insurance

- Liability insurance is purchased to address business liability risks that are not covered by general liability insurance.
  - Also referred to as “errors and omissions” insurance or “malpractice” insurance.
  - the insurance is useful, because it protects the firm, the professional, or employees from serious financial disruption. In Québec, the professional code requires every order to determine the categories of its members that should secure liability insurance coverage.
- Every member of the OIQ shall join the group plan insurance contract (with a specified minimum coverage) to address professional liability

#### POSCAST Contract and Tort

##### Contract

A contract can be formally defined as a voluntary agreement made between at least two persons with the mutual intention of creating a legal obligation.

- First, there has to be a mutual voluntary agreement to enter into the contract
- Second, there must be evidence that an offer was made by one party and the other party accepted the offer and then entered into the contract.
- Third, a contract should have a motive. In other words, there must be a consideration of benefit for each party to enter into the contract. If it appears that only one party to the contract is giving something while the other party has not given anything, then there is no contract.
- Fourth, if the contract is made on an illegal matter, then it is unenforceable in a court because the contract is considered illegal.
- Finally, the parties who enter into the contract have to be legal persons.

##### Contract and Employment

##### Types of contracts that can be signed

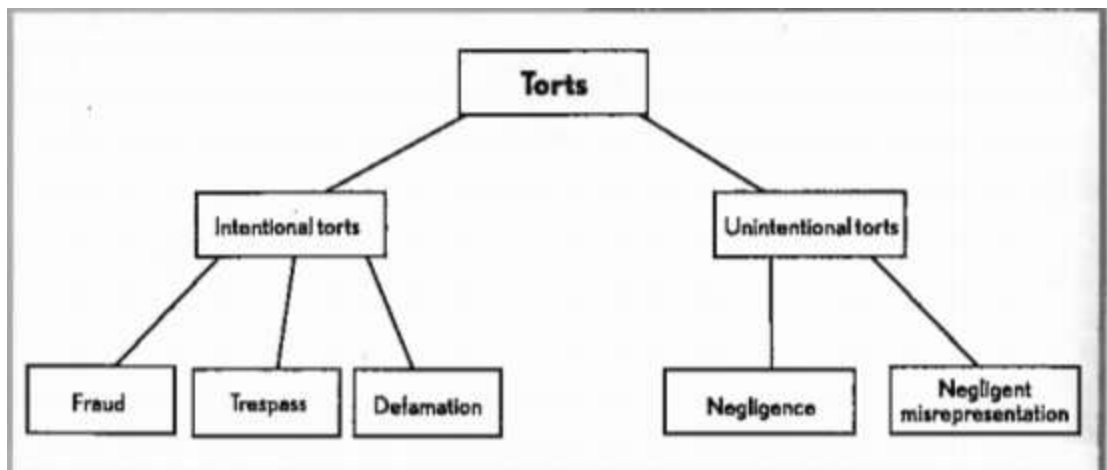
- Regular employees: an individual who works for an employer and is entitled to wages under an employment contract that controls the details of work performance
- Contract employees: an individual who has an employment contract for a fixed term
- Independent contractors: an individual who has a contract for services with the client or customer to undertake a specific project but who is left free to do the assigned work

##### Tort

French word tort, which means to do wrong. Tort refers to the breach of a private (to another person only and not to society as a whole) obligation to not do wrong to another person.

There are three types of tort that are recognized in the law – intentional torts, negligence torts, or strict liability torts.

- Intentional torts as the name suggests occur, when a person acts with the intent of causing harm to another person.( fraud, trespass, defamation and intimidation, and assault and battery.)
- Negligence torts, as the name suggests, is caused when a person acted negligently to cause harm to another person.(nuisance, professional negligence, and product liability
- Strict liability torts do not usually apply in Canada (Here a person can be held responsible for damages caused to another person without any negligence or intention.)



The duty of care can be defined as the professional expectation to exercise reasonable care to avoid injuring the plaintiff

# LECTURE 11

PODCAST (Compromise and Conflict Resolution)

Compromise: can be defined with both positive and negative connotations

Positive:

- The positive connotation for compromise in a conflict situation arises from finding a common ground between differing sides in the spirit of mutual agreement.
- it suggests the quality of flexibility on the part of individuals as they adjust their goals in light of the circumstance.

Negative:

- suggests a willingness to surrender one's stated objectives and principles.
- It also suggests a sign of weakness in conviction

Making a compromise is not an ethical compromise, when individuals agree on fundamental values but disagree on the implementation process.

Making a compromise is an ethical issue, when parties disagree on the same fundamental value.

A compromise is acceptable under some specific conditions:

1. If there is a great degree of factual or conceptual uncertainty in making the decision.
2. When the moral issue has great complexity and there is no black/white answer.
3. When there are resource constraints (time limits or physical inabilities) that will lead to an imperfect decision.
4. There is a danger of breaking vital cooperative relationships – team, friends, or family.

Conflict Resolution

It is important to consider two aspects regarding how individuals behave and think.

- The first aspect is assertiveness or the degree of concern individuals have about the self
- The second aspect is cooperativeness or the degree of concern individuals have about others

According to these two aspects, people can be categorized into five modes of conflict handling.

1. Competing mode: Individual pursues self-interest at the other person's expense.
2. Accommodating mode: Individual neglects self-interest to consider the other person's needs.
3. Avoiding mode: Person avoids conflict situation and does not address it.
4. Collaborating mode: Works with the other person to find a solution that meets the interests of both persons.
5. Compromising mode: Only partially satisfies both parties.

Depending on the nature of the conflict, the circumstances, different modes are more appropriate.

### Safety and Accidents

- Safety is a key responsibility for engineers, both in the workplace as well as for the public
- In thinking about public safety, an engineer needs to bear in mind both product and process safety.
- Thus, it is not enough to consider how safe products are, but also how safe industrial processes are for the public

### Accidents can be broadly categorized into three types:

1. Procedural accidents: Such accidents are attributed to operator errors, the failures to follow regulations or standard operating procedures.
  - Solution is to provide better operator training, supervision and regulation.
2. Engineered accidents: Such accidents result from flaws in engineering design or from sub-optimal performance.
  - Solution is to conduct better research and testing of materials and designs.
3. Systemic accidents: These accidents are the ones that are least diagnosable and predictable. These accidents are the result of complexity and coupling between subsystems that lead to unforeseen accident pathways that can have catastrophic consequences.
  - Solution is to provide multiple redundancies to prevent cascading failures in industrial systems.

### Designing for safety aspects:

- First, design must comply with applicable legal standards, in other words, obey legal requirements.
- Second, design must comply with accepted engineering practice or keep up with the state of the art in knowledge and practices.
- Third, research all possible alternative designs, including discuss design strategies with other designers.
- Finally, foresee possible uses and misuses especially in system design, and then create redundancies or backups to address system deficiencies.

### Risk and Risk Communication

Yet another way to address safety is by analyzing and communicating the risk associated with a process or product. Risk can be defined as the probability of an event occurring and of the consequences of that event. Risk assessment is the determination of quantitative value of risk related to a recognized threat.

There are several existing methods that attempt to model and assess the risk associated with complex processes

- Failure Mode- Effects & Criticality Analysis (FMECA)- Hazard Analysis & Critical Control Points-Failure Tree Analysis.

Risk neutralization can be defined as the utilization of safety measures to reduce the danger potential of a product or process.

Zero risk does not exist.

Risk perception can be defined as the degree of sentiment of danger among individuals who are exposed to the source of risk.

The goal of risk communication is to not only inform people and to warn them of potential risks, but also foster trust in the analysis/assessment of risk.

- Communication must be made by persons in charge and having the authority to share information.
- All stakeholders affected must be identified and their concerns addressed.
- Be honest in assessments but ensure that you do not add to hysteria.

Voluntary consent by the public is an essential basis of liberal democracy in a “risk society” – that is a society where products and processes expose citizens to varying levels of risk.

Voluntary consent requires engineers to provide or disclose information and then obtain voluntary agreement from concerned stakeholders for introducing new products or processes.