ETHICS

Ethics is a set of principles or standards of human conduct that govern the behaviour of individuals or organisations.

OBJECTIVES OF ENGINEERING ETHICS:

1. Stimulate the moral imagination
2. Recognising ethical issues
3. Developing analytical skills
4. Eliciting a sense of responsibility
5. Provide codes of ethics
6. Provide case studies and illustrations
7. Ability and freedom to express one’s concern(whistle blowing)
8. Foster an ethical atmosphere

MORALITY

Morality is concerned with principles and practices of morals such as:

(a) What ought or ought not to be done in a given situation?

(b) What is right or wrong about the handling of a situation? and

(c) What is good or bad about the people, policies, and ideals involved?

The difference between Ethics and Morality:

Ethics deals with what someone ought to do. Morality describes what someone is actually doing.

Ethics refer to rules provided by an external source, e.g., codes of conduct in workplaces or principles in religions. **Morals** refer to an individual's own principles regarding right and wrong.

Difference between Morals and Ethics

ETHICS

1. Social system - External.
2. We do it because society says it is the right thing to do.
3. Greek word "ethos" meaning character.
4. Thrust is on influence, education, training through codes, guidelines, and correction.
5. Less serious, hence second priority only. Less common. But relevant today, because of complex interactions in the modern society.
6. Example: Notions or beliefs about tastes, manners, customs and towards laws.

MORALS: personal compass of right & wrong.

1. Individual – Internal
2. We do it because we believe in something being right or wrong.
3. Latin word "mos" meaning "custom".
4. Thrust is on judgment and punishment, in the name of God or by laws.
5. 4. In case of conflict between the two, morality is given top priority, because the damage is more. It is more common and basic.
6. Example: Character flaw, corruption, extortion, and crime

VALUES

Values are the scales we use to weigh our choices for our actions, whether to move towards or away from something.

TYPES OF VALUES:

The five core human values are:

(1) Right conduct

(2) Peace

(3) Truth

(4) Love

(5) Nonviolence

WORK ETHICS

Work ethics is defined as a set of attitudes concerned with the value of work, which forms the motivational orientation. The ‘work ethics’ is aimed at ensuring the economy (get job, create wealth, earn salary), productivity (wealth, profit), safety (in workplace), health and hygiene (working conditions), privacy (raise family), security (permanence against contractual, pension, and retirement benefits), cultural and social development (leisure, hobby, and happiness), welfare (social work), environment (anti-pollution activities), and offer opportunities for all, according to their abilities, but without discrimination.

Many complex social problems exist in the industrial/business scenario, because:

1. The people desire to be recognized as individuals and treated with dignity, as living human beings.
2. Economic independence.
3. Pay as well as the pace of work should be in commensurate with the expertise required, acquired, and utilized in the persons.

4. Privacy (personal freedom) of the employee, including women, is to be protected.

5. Security during job and upon retirement.

6. Recognition to non-work activities, such as leisure, paid holiday on the day of visit of a dignitary, social service, and other developmental activities.

7. Hard work and productivity are very essential for the success of an industry.

8. Employee alienation.

9. A different view of work ethics: Work is considered as a necessary evil.

10. As per the Protestant Work Ethics, the financial success is a sign that is favored by God.

RESPECT FOR OTHERS

This is a basic requirement for nurturing friendship, team work, and for the synergy it promotes and sustains. The principles enunciated in this regard are:

1. Recognize and accept the existence of other persons as human beings, because they have a right to live, just as you have.
2. Respect others' ideas (decisions), words, and labour (actions). One need not accept or approve or award them, but shall listen to them first. One can correct or warn, if they commit mistakes.
3. Show 'goodwill' on others. Love others. Allow others to grow.

LIVING PEACEFULLY

One should adopt the following means to live peacefully, in the world:

1. Order in one's life (self-regulation, discipline, and duty).
2. Pure thoughts in one's soul (loving others, blessing others, friendly, and not criticizing or hurting others by thought, word or deed).
3. Creativity in one's head (useful and constructive).
4. Beauty in one's heart (love, service, happiness, and peace).

The following are the factors that promote living, with internal and external peace:

1. Conducive environment.
2. Secured job and motivated with 'recognition and reward'.
3. Absence of threat or tension by pressure due to limitations of money or time.
4. Absence of unnecessary interference or disturbance, except as guidelines.
5. Healthy labour relations and family situations.
6. Service to the needy

CARING

Caring is feeling for others. It is a process which exhibits the interest in, and support for, the welfare of others with fairness, impartiality and justice in all activities, among the employees, in the context of professional ethics.

SHARING

Sharing is a process that describes the transfer of knowledge (teaching, learning, and information), experience (training), commodities (material possession) and facilities with others.

For the humanity, ‘sharing’ is a culture. The ‘happiness and wealth’ are multiplied and the ‘crimes and sufferings’ are reduced, by sharing.

HONESTY

Honesty is a virtue, and it is exhibited in two aspects namely,

(a) Truthfulness and

(b) Trustworthiness.

Honesty is mirrored in many ways. The common reflections are:

(a) Beliefs

(b) Communication

(c) Decisions (ideas, discretion)

(d) Actions

(e) Intended and unintended results achieved.

some of the actions of an engineer that leads to dishonesty are:

1. Lying
2. Deliberate deception
3. Withholding the information
4. Not seeking the truth
5. Not maintaining confidentiality
6. Giving professional judgment under the influence of extraneous factors

COURAGE

Courage is the tendency to accept and face risks and difficult tasks in rational ways. Self-confidence is the basic requirement to nurture courage. Courage is classified into three types, based on the types of risks, namely

(a) Physical courage

(b) Social courage

(c) Intellectual courage.

The courageous people own and have shown the following characteristics, in their professions:

(a) Perseverance

(b) Experimentation

(c) Involvement

(d) Commitment

VALUING TIME

Time is rare resource. Once it is spent, it is lost for ever. It can not be either stored or recovered. Hence, time is the most perishable and most valuable resource too. This resource is continuously spent, whether any decision or action is taken or not.

COOPERATION

Co-operation is activity between two persons or sectors that aims at integration of operations. According to professional ethics, cooperation should exist or be developed, and maintained, at several levels; between the employers and employees, between the superiors and subordinates, among the colleagues, between the producers and the suppliers (spare parts), and between the organisation and its customers.

The impediments to successful cooperation are:

1. Clash of ego of individuals.
2. Lack of leadership and motivation.
3. Conflicts of interests, based on region, religion, language, and caste.
4. Ignorance and lack of interest.

COMMITMENT

Commitment means alignment to goals and adherence to ethical principles during the activities. First of all, one must believe in one's action performed and the expected end results (confidence). It means one should have the conviction without an iota of doubt that one will succeed. Holding sustained interest and firmness, in whatever ethical means one follows, with the fervent attitude and hope that one will achieve the goals, is commitment. It is the driving force to realize success.

EMPATHY

Empathy is social radar. It includes the imaginative projection into other's feelings and understanding of other's background such as parentage, physical and mental state, economic situation, and association.

To practice 'Empathy', a leader must have or develop in him, the following characteristics:

1. Understanding others.
2. Service orientation.
3. Developing others.
4. Leveraging diversity.
5. Political awareness.

The benefits of empathy include:

1. Good customer relations
2. Harmonious labour relations
3. Good vendor-producer relationship

SPIRITUALITY

Spirituality is a way of living that emphasizes the constant awareness and recognition of the spiritual dimension (mind and its development) of nature and people, with a dynamic balance between the material development and the spiritual development.

Spirituality includes creativity, communication, recognition of the individual as human being (as opposed to a life-less machine), respect to others, acceptance (stop finding faults with colleagues and accept them the way they are), vision (looking beyond the obvious and not believing anyone blindly), and partnership (not being too authoritative, and always sharing responsibility with others, for better returns).

Spirituality in the Workplace

1. Verbally respect the individuals as humans and recognize their values in all decisions and actions.
2. Get to know the people with whom you work and know what is important to them. Know their goals, desires, and dreams too.
3. State your personal ethics and your beliefs clearly.
4. Support causes outside the business.
5. Encourage leaders to use value-based discretion in making decisions.
6. Demonstrate your own self-knowledge and spirituality in all your actions.
7. Do unto others as you would have them do unto you.

PROFESSION, PROFESSIONAL AND PROFESSIONALISM

PROFESSION: Profession is defined as any occupation/job/vocation that requires advanced expertise (skills and knowledge), self regulation and concerted service to the public good. It brings high status, socially and economically. The characteristics of a profession are:

1. Advanced expertise
2. Self regulation
3. Public good

PROFESSIONAL: It related to a person or any work that a person does on profession and which requires expertise (skills and knowledge), self regulation and results in public good. The term professional means a 'person' as well as a 'status'.

PROFESSIONALISM: It is the status of a professional which implies certain attitudes or typical qualities that are expected of a professional. Professionalism may be defined as the service related to achieving the public good, in addition to the practices of the knowledge of moral ideals.

CHARACTERISTICS OF THE PROFESSIONAL

The characteristics of the ‘profession’ as distinct from ‘non-professional occupation’ are listed as follows:

1. Extensive Training

2. Knowledge and Communication Skills

3. Monopoly

4. Autonomy in Workplace

5. Ethical Standards

6. Empathy

MODELS OF PROFESSIONAL ROLES

1. Saviour
2. Guardian
3. Bureaucratic Servant
4. Social Servant
5. Social Enabler and Catalyst
6. Game Player

RESPONSIBILITY

Different types of responsibilities exhibited in human transactions are:

1. Moral Responsibility
2. Causal Responsibility
3. Job Responsibility
4. Legal Responsibility

SELF-CONTROL

It is a virtue of maintaining personal discipline. It means a strong will and motivation and avoidance of fear, hatred, lack of efforts, temptation, self-deception, and emotional response. It encompasses courage and good judgment also. Self-respect promotes self-control.

SELF-INTEREST

Self-interest is being good and acceptable to oneself. It is pursuing what is good for oneself. It is very ethical to possess self-interest. As per utilitarian theory, this interest should provide for the respect of others also. Duty ethics recognizes this aspect as duties to ourselves. Then only one can help others. Right ethicist stresses our rights to pursue our own good. Virtue ethics also accepts the importance of self-respect as link to social practices.

SELF-RESPECT

It is defined as valuing oneself in morally suitable ways.

Self-respect includes:

(a) recognition, which means respect to others, their ideas, decisions, ability, and rights.

(b) appraisal, which means properly valuing ourselves as to how well we face moral standards and our personal commitments (aims).

An intensive but balanced feeling of self-respect is sense of honour. This includes intense agony and guilt for wrong doings. Self-control is a virtue of maintaining personal discipline (self-regulation). Courage is a bye-product of self-respect, which makes a person face the hardship in rational way

CASE STUDY: THE CHALLENGER

What happened? The orbiter of the Challenger had three main engines fuelled by liquid hydrogen. The fuel was carried in an external fuel tank which was jettisoned when empty. During lift-off, the main engines fire for about nine minutes, although initially the thrust was provided by the two booster rockets. These booster rockets are of the solid fuel type, each burning a million pound load of aluminum, potassium chloride, and iron oxide. The casing of each booster rocket is about 150 feet long and 12 feet in diameter. This consists of cylindrical segments that are assembled at the launch site. There are four-field joints and they use seals consisting of pairs of O-rings made of vulcanized rubber. The O-rings work with a putty barrier made of zinc chromate.

The engineers were employed with Rockwell International (manufacturers for the orbiter and main rocket), Morton-Thiokol (maker of booster rockets), and they worked for NASA. After many postponements, the launch of Challenger was set for morning of Jan 28, 1986. Allan J. McDonald was an engineer from Morton-Thiokol and the director of the Solid Rocket Booster Project. He was skeptic about the freezing temperature conditions forecast for that morning, which was lower than the previous launch conditions. A teleconference between NASA engineers and MT engineers was arranged by Allan.

CASE STUDY: THE CHALLENGER (CONT.)

Arnold Thompson and Roger Boisjoly, the seal experts at MT explained to the other engineers how the booster rocket walls would bulge upon launch and combustion gases can blow past the O-rings of the field joints.

On many of the previous flights the rings have been found to have charred and eroded. In freezing temperature, the rings and the putty packing are less pliable. From the past data gathered, at temperature less than 65 °F the O-rings failure was certain. But these data were not deliberated at that conference as the launch time was fast approaching.

The engineering managers Bob Lund and Joe Kilminster agreed that there was a safety problem. Boisjoly testified and recommended that no launch should be attempted with temperature less than 53 °F. These managers were annoyed to postpone the launch yet again. The top management of MT was planning for the renewal of contract with NASA, for making booster rocket. The managers told Bob Lund “to take-off the engineering hat and put on your management hat”. The judgment of the engineers was not given weightage. The inability of these engineers to substantiate that the launch would be unsafe was taken by NASA as an approval by Rockwell to launch.

CASE STUDY: THE CHALLENGER (CONT.)

At 11.38 a.m. the rockets along with Challenger rose up the sky. The cameras recorded smoke coming out of one of the filed joints on the right booster rocket. Soon there was a flame that hit the external fuel tank. At 76 seconds into the flight, the Challenger at a height of 10 miles was totally engulfed in a fireball. The crew cabin fell into the ocean killing all the seven aboard. Some of the factual issues, conceptual issues and moral/normative issues in the space shuttle challenger incident, are highlighted hereunder for further study.

Moral/Normative Issues

1. The crew had no escape mechanism. Douglas, the engineer, designed an abort module to allow the separation of the orbiter, triggered by a field-joint leak. But such a ‘safe exit’ was rejected as too expensive, and because of an accompanying reduction in payload.
2. The crew were not informed of the problems existing in the field joints. The principle of informed consent was not followed.
3. Engineers gave warning signals on safety. But the management group prevailed over and ignored the warning.

CASE STUDY: THE CHALLENGER (CONT.)

Conceptual Issues

1. NASA counted that the probability of failure of the craft was one in one lakh launches. But it was expected that only the 100000th launch will fail.
2. There were 700 criticality-1 items, which included the field joints. A failure in any one of them would have caused the tragedy. No back-up or stand-bye had been provided for these criticality-1 components.

Factual/Descriptive Issues

1. Field joints gave way in earlier flights. But the authorities felt the risk is not high.
2. NASA has disregarded warnings about the bad weather, at the time of launch, because they wanted to complete the project, prove their supremacy, get the funding from Government continued and get an applaud from the President of USA.
3. The inability of the Rockwell Engineers (manufacturer) to prove that the lift-off was unsafe. This was interpreted by the NASA, as an approval by Rockwell to launch.