

Knowledge Institute of Technology

Department of Mechanical

Engineering

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PROFESSIONAL ETHICS IN ENGINEERING

OBJECTIVES

To enable the students to create an awareness on Engineering Ethics and Human Values

GE6075 PROFESSIONAL ETHICS IN ENGINEERING

- **UNIT I HUMAN VALUES**

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Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

VALUES

A value is defined as a principle that promotes well-being or prevents harm

- guidelines for our success, our paradigm about what is acceptable.

- associate emotions to our experiences and guide our choices, decisions and actions.

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

The five core human values are:

(1) Right conduct,

(2) Peace,

(3) Truth,

(4) Love, and

(5) Nonviolence.

ETHICS

- Ethics is the word that refers to morals, values, and beliefs of the individuals , family or the society
- refer to rules provided by an external source, e.g., codes of conduct in workplaces or principles in religions
- Basically it is an activity and process of inquiry
- Ethics refers to a particular set of beliefs, attitudes, and habits of individuals or groups concerned with morals
- It tells us how to live, to respond to issues, through the duties, rights, responsibilities, and obligations.
- The study on ethics helps to know the people's beliefs, values, and morals, learn the good and bad of them, and practice them to maximize the well-being and happiness

Engineering Ethics

- is the study of the moral issues and decisions confronting individuals and organizations engaged in engineering
- is the study of related questions about the character, policies, and relationship of people and corporations involved in technological activity
- It consists of the responsibilities and rights that ought to be endorsed by those engaged in engineering, and also of desirable ideals and personal commitments in engineering

Morals Vs Ethics

Morals

- refer to an individual's own principles regarding right and wrong
- Are up to the individual and differs from person to person , from one culture to another

Ethics –

- Rules or principles provided by the external source
- Are specific and do not differ

Work Ethic

- Society requires industry/business system which provides manufacturing, distribution and consumption activities.
- It needs investment (capital input), labour (input), supply (raw materials), production (industries, business organizations), marketing and distribution (transport), and consumption (public, customer).

Work ethics

- ☐ affirms that, the work *per se is worthy, admirable and* valuable at personal and social levels.
- ☐ It improves the quality of life and makes life purposeful, successful and happy.
- ☐ By work ethics, duties to the self, family, society, and nation are fulfilled
- ☐ Rights of the individuals are respected and nourished.

Work Ethics

- ❑ To work (job), is not for monetary considerations only.
- ❑ Human beings believe that it is good to work. It is good for the body and mind.
- ❑ It promotes self-respect, self-esteem, good for the family, and obligation to the society and allow the world to prosper.
- ❑ Work lays a moral and meaningful foundation for life.

Living peacefully

Nurture

1. Order in one's life (self-regulation, discipline, and duty).
2. Pure thoughts.
3. Creativity
4. Beauty in one's heart (love, service, happiness, and peace).

Get

5. Good health/body (physical strength for service).

Act

6. Help the needy with head, heart, and hands
7. Not hurting and torturing others either physically, verbally, or mentally.

CARING

Caring is a process which exhibits the interest in, and support for, the welfare of others with fairness, impartiality

It includes showing respect to the feelings of others, and also respecting and preserving the interests of all others concerned.

Caring is reflected in activities such as friendship, membership in social clubs and professional societies, and through various transactions in the community

SHARING

- Sharing is a process that describes the transfer of knowledge, experience, commodities and facilities with others.
- Sharing is voluntary and it can not be driven by force, but motivated successfully through ethical principles.

HONESTY

- Honesty is a virtue, and it is exhibited in two aspects namely,
- (a) Truthfulness and
- (b) Trustworthiness
- Truthfulness is to face the responsibilities upon telling truth – quality of being honest
- Trustworthiness is maintaining integrity and taking responsibility for personal performance – reliable / dependable

Honesty is mirrored in many ways.

The common reflections are:

- (a) Beliefs (intellectual honesty).
- (b) Communication (writing and speech).
- (c) Decisions (ideas, discretion).
- (d) Actions (means, timing, place, and the goals). and
- (e) Intended and unintended results achieved.

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

1. *Lying* – giving wrong information to the right people

2. *Deliberate deception* - judge or decide on matters one is not familiar or with insufficient data or proof, to impress upon the customers or employers

3. *Withholding the information* - hiding the facts during communication to one's superior or subordinate, intentionally or otherwise

4. *Not seeking the truth* - Some engineers accept the information or data, without applying their mind and seeking the truth

5. *Not maintaining confidentiality* - It is giving right information to wrong people

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, and
 - (c) Intellectual courage.

- In physical courage, the thrust is on the adequacy (capability) of the physical strength, including the muscle power and armaments.
- The social courage involves the decisions and actions to change the order, based on the conviction (belief) for or against certain social behaviors.
- This requires leadership abilities, including empathy and sacrifice, to mobilize and motivate the followers for the social cause.

- The intellectual courage is inculcated in people through acquired knowledge, experience, games, tactics, education, and training
- Facing the criticism, owning responsibility, and accepting the mistakes or errors when committed are the expressions of courage.

VALUING TIME

- Time is rare resource. Once it is spent, it is lost for ever. It can neither be stored nor be recovered.
- Time is the most perishable and most valuable resource too. This resource is continuously spent, whether any decision or action is taken or not.

The proverbs,

‘Time and tide wait for nobody’

and

‘Procrastination is the thief of time’

amply illustrate this point.

COOPERATION

- It is a team-spirit present with every individual engaged in engineering.
- Co-operation is activity between two persons or sectors that aims at integration of operations (synergy), while not sacrificing the autonomy of either party.

- Further, working together ensures, coherence, i.e., blending of different skills required, towards common goals.
- Cooperation promotes collinearity, coherence ,co-ordination and the synergy.
- Cooperation should exist or be developed, and maintained, at several levels; between the employers and employees, superiors and subordinates, organization and customers and among the colleagues.

The impediments(obstacles) 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.

By careful motivation, leadership, fostering (development) and rewarding team work, training on appreciation to different cultures 'cooperation' can be developed and also sustained.

COMMITMENT

- Commitment means *alignment to goals and adherence to ethical principles during the activities*
- Holding sustained interest and firmness, in whatever ethical means one follows, with the fervent (keen) attitude and hope that one will achieve the goals, is commitment.

- It is the driving force to realize success.
- This is a basic requirement for any profession.
- When the teacher is committed to his job, the students will succeed in life and contribute 'good' to the society.
- The commitment of top management will naturally lead to committed employees, whatever may be their position or emoluments.

EMPATHY

- Empathy is sensing what others feel about, without their open talk.
- Empathy begins with showing concern, and then obtaining and understanding the feelings of others, from others' point of view.
- It is also defined as the ability to put one's self into the psychological frame or reference or point of view of another, to know what the other person feels.

To practice 'Empathy', a leader must develop, the following characteristics

- 1. Understanding others*
- 2. Service orientation*
- 3. Developing others*

In developing others, the one should inculcate the 'listening skill' first.

Communication = 22% reading and writing + 23% speaking + 55% listening

- Giving correct feedback and positive expectation of the subject's abilities and the resulting performance.
- *Leveraging diversity*
- *Political awareness*: It is the ability to read political and social currents in an organization.
- The benefits of empathy include:
 - 1. Good customer relations
 - 2. Harmonious labor relations
 - 3. Good vendor-producer relationship

SELF-CONFIDENCE

Certainty in one's own capabilities, values, and goals, is self-confidence

The people with self-confidence exhibit courage to get into action and unshakable faith in their abilities, whatever may be their positions.

They are not influenced by threats or challenges and are prepared to face them and the unexpected consequences.

The self-confidence in a person develops a sense of partnership, respect, and accountability, and this helps the organization to obtain maximum ideas, efforts, and guidelines from its employees.

The people with self-confidence have the following characteristics:

1. A self-assured standing
2. Willing to listen and to learn from others and adopt (flexibility)
3. Frank to speak the truth, and
4. Respect others' efforts and give due credit

The factors that shape self-confidence in a person are:

1. Heredity (attitudes of parents) and family environment (elders)
2. Friendship (influence of friends/colleagues)
3. Influence of superiors/role models
4. Training in the organization

The following methodologies are effective in developing self-confidence in a person:

1.Encouraging SWOT analysis. By evaluating their strength and weakness, they can anticipate and be prepared to face the results.

2.2. Training to evaluate risks and face them (self-acceptance).

3.3. Self-talk . It is conditioning the mind for preparing the self to act, without any doubt on his capabilities. This make one accepts himself while still striving for improvement.

4.4. Study and group discussion on the history of leaders and innovators

Character

It is a characteristic property that defines the behavior of an individual.

Character includes attributes that determine a person's moral and ethical actions and responses.

The character is exhibited through conduct. Character is determined by the expectations of society.

Character implies certain unity of qualities with a recognizable degree of *constancy (faithfulness)* in mode of action.

SPIRITUALITY

Spirituality is a way of living that emphasizes the constant awareness and recognition of the spiritual dimension 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 , respect to others, acceptance, vision

Spirituality is motivation as it encourages the colleagues to perform better.

Tolerance and empathy are the reflections of spirituality.

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.
 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.
- MECH-KIOT**
7. Do unto others as you would have them do unto you.

Spirituality for Corporate Excellence

1. *Self-awareness* — Realization of self-potential.
2. *Alertness in observation and quickness in decision making,*
3. *Being visionary and value based*
4. *Holism* — Comprehensive views and interconnected with different aspects.
5. *Compassion* — Sympathy, empathy and concern for others.

- *Respect for diversity* — Respect others and their views.
- *Moral Autonomy* — It means action based on rational and moral judgment.
- *Creative thinking and constant reasoning*
- *Ability to analyze and synthesize*
- *Positive views of adversity*
- *Humility* — The attitude to accept criticism (it requires courage!) and willing to correct. It includes modesty and acknowledging the work of colleagues.
- *Sense of vocation* — Treat the duty as a service to society, besides your organization.

The role of yoga in stress management

Stress is a complex, dynamic process of interaction between a person and his or her life.

Stress can affect one's health, work performance, social life, and the relationship with family members.

Stress can also be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker.

Stress is a silent killer, and prolonged exposure to stress may exert harmful effects on physical, psychological, and behavioral well-being of an individual.

“Burnout”

- The rapid change of the modern working life is associated with increasing demands of learning new skills**
 - the need to adapt to new types of work**
 - pressure of higher productivity and quality of work, time pressure, and hectic jobs**
- These factors are increasing stress among the workforce.**

IMPACT OF STRESS

Stress-related disorders evolve gradually through four recognizable stages

1. In the first, psychological changes such as anxiety, irritability, and insomnia (restlessness) arise, due to over-stimulation of the sympathetic nervous system.
2. In the second stage symptoms such as high blood pressure, elevated heart rate, and increased intestinal motility surface.
3. a more profound physical or biochemical imbalance
4. In the final fourth stage, irreversible symptoms that often require surgical or long-term management appear.

In contrast, the relaxation response has been proposed as an antidote to stress; relaxation decreases heart rate, breathing, body temperature, and muscle tension.

Certain yoga techniques may improve physical and mental health through regulation of the sympathetic nervous system (SNS).

- ✓ **Yoga significantly decreases heart rate and systolic and diastolic blood pressure.**
- ✓ **Studies suggest that yoga reverses the negative impact of stress on the immune system by increasing levels of immunoglobulin A as well as natural killer cells.**
- ✓ **Regardless of the pathophysiologic pathway, yoga has been shown to have immediate psychological effects: decreasing anxiety and increasing feelings of emotional, social, and spiritual well-being.**

Yogic science includes

yogasanas (postures)

pranayama (breathing practices)

dhyana (meditation), and

relaxation techniques

which benefit human beings at every level.