

**AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR
(AUTONOMOUS)**

II B.Tech I Semester (EEE)

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(13HS120) PROFESSIONAL ETHICS AND HUMAN VALUES

Objectives:

- To create an awareness on Engineering Ethics and Human Values
- To instill Moral and Social Values and Loyalty
- To appreciate the rights of others.

UNIT-I:

Human Values: Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Spirituality

UNIT-II:

Engineering Ethics: Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.

UNIT-III:

Engineering as Social Experimentation: Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study

UNIT-IV:

Safety, Responsibilities and Rights: Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies.
Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

Text Books:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York 1996.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

Reference Books:

1. Charles D. Fleddermann, "Engineering Ethics", Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint)
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY



BROCHURE ON HUMAN VALUES & PROFESSIONAL ETHICS

Man is a social animal in that whatever he needs and wants he gets from the labour and cooperation of the society. Similarly, whatever he produces materially and whatever the knowledge he acquires are spreading to all people of the world. To cope with the diverse modern environments everyone should have holistic education to sympathize and live in tolerance with the standards of his fellow beings. Quality education is the elementary right of every Indian Citizen. Quality Education lays the good foundation for Individual growth. Audisankara is committed to impart Quality Education to create Skilled Man Power for the Nation

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About Institute

Audisankara College of Engineering and Technology (ASCET), Gudur was established in the year 2001 to promote rich tradition of excellence in technology based education. A premier-league institution among the affiliates of JNTUA, Anantapuramu, approved by All India Council for Technical Education (AICTE) and also ISO 9001:2000 certified. ASCET is accredited by NAAC with “B++” grade and conferred “B++” grade by Govt. of Andhra Pradesh.

ASCET is strengthened with highly qualified, experienced and dedicated faculty members. The Faculty understand the student’s goals and pay attention to cater their needs and support them at every step to make them a confident professional. The institution intends to promote collaborative industry relevant projects, R&D and consultancy to raise the overall academic standard as well as build strong Industry-Institute relations. The institute strives to translate its vision into reality and achieve the desired goals.

Vision Statement

To make ASCET a centre for academic excellence where young innovative and inventive minds with novel ideas can interact to evolve new technologies relevant in meeting the societal needs and help rapid industrial growth with increased employment opportunities and changed life styles.

Mission Statement

To provide the students with high-quality knowledge and skills and thorough practical exposure in hot areas of technology and engineering so that they develop all the competence and confidence to take on the technological challenges of tomorrow. To foster human values and all-round personality development in the student community so that they not only excel as practitioners and entrepreneurs, but also become useful and responsible members of the industry and society that they serve and lead.

OBJECTIVES

(Human Values & Professional Ethics)

- To understand the moral values that ought to guide the Engineering profession, Resolve the moral issues in the profession.
- To justify the moral judgment concerning the profession.
- Intended to develop a set of beliefs, attitudes, and habits that engineers should display concerning morality.
- To create an awareness on Management Ethics and Human Values.
- To inspire Moral and Social Values and Loyalty.
- To appreciate the rights of others.

The prime objective of the Professional Ethics is to develop ability to deal effectively with moral complexity in students of Audisankara College of Engineering & Technology(Autonomous), Gudur, SPSR Nellore Dist., Andhra Pradesh.

TO IMPROVEMENT OF THE COGNITIVE SKILLS

(SKILLS OF THE INTELLECT IN THINKING CLEARLY)

- Moral awareness (proficiency in recognizing moral problems in Engineering)
- convincing moral reasoning (comprehending, assessing different views)
- Moral coherence (forming consistent viewpoints based on facts)
- Moral imagination (searching beyond obvious the alternative responses to issues and being receptive to creative solutions)
- Moral communication, to express and support one's views to others.

TO ACT IN MORALLY DESIRABLE WAYS

(TOWARDS MORAL COMMITMENT AND RESPONSIBLE CONDUCT)

- Moral reasonableness i.e., willing and able to be morally responsible.
- Respect for persons, which means showing concern for the well-being of others, besides oneself.
- Tolerance of diversity i.e., respect for ethnic and religious differences, and acceptance of reasonable differences in moral perspectives.
- Moral hope i.e., believes in using rational dialogue for resolving moral conflicts.

PART- I

HUMAN VALUES

MORAL

Moral are the worthy ideals or principles that one follows to distinguish the right from the wrong. These ideals or virtues are considered worthy in building up the character of an individual. They were edited, changed or modified rulers (dynasty) according with the development of knowledge in engineering and technology time to time.

Moral Value refers to the good virtues such as honesty, integrity, truthfulness, compassion, helpfulness, love, respectfulness, hard-work, etc 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?

VALUES

Humans have the unique ability to define their identity, choose their values and establish their beliefs. All three of these directly influence a person's behavior. People have gone to great lengths to demonstrate the validity of their beliefs, including war and sacrificing their own life! Conversely, people are not motivated to support or validate the beliefs of another, when those beliefs are contrary to their own. People will act congruent with their personal values or what they deem to be important. —**A value is defined as a principle that promotes well-being or prevents harm. Another definition is: —Values are our guidelines for our success—our paradigm about what is acceptable. Personal values are defined as: —Emotional beliefs in principles regarded as particularly favorable or important for the individual.** Our values associate emotions to our experiences and guide our choices, decisions and actions.

Types of Values

Values related to Right Conduct are:

- (a) **Self-help Skills:** Care of possessions, diet, hygiene, modesty, posture, self reliance, and tidy appearance.
- (b) **Social Skills:** Good behavior, good manners, good relationships, helpfulness, No wastage, and good environment, and
- (c) **Ethical Skills:** Code of conduct, courage, dependability, duty, efficiency ingenuity, initiative, perseverance, punctuality, resourcefulness, respect for all, and responsibility 2. Values related to

PEACE are: Attention, calmness, concentration, contentment, dignity, discipline, equality, equanimity, faithfulness, focus, gratitude, happiness, harmony, humility, inner silence, optimism, patience, reflection, satisfaction, self-acceptance, self-confidence, self-control, self-discipline, self-esteem, self-respect, sense control, tolerance, and understanding.

3. Values related to Truth are: Accuracy, curiosity, discernment, fairness, fearlessness, honesty, integrity (unity of thought, word, and deed), intuition, justice, optimism, purity, quest for knowledge, reason, self-analysis, sincerity, spirit of enquiry, synthesis, trust, truthfulness, and determination.

4. Values related to Love are: Acceptance, affection, care, compassion, consideration, dedication, devotion, empathy, forbearance, forgiveness, friendship, generosity, gentleness, humanness, interdependence, kindness, patience, patriotism, reverence, sacrifice, selflessness, service, sharing, sympathy, thoughtfulness, tolerance and trust.

5. Values related to Non-violence are: (a) Psychological: Benevolence, compassion, concern for others, consideration, forbearance, forgiveness, manners, happiness, loyalty, morality, and universal love (b) Social: Appreciation of other cultures and religions, brotherhood, care of environment, citizenship, equality, harmlessness, national awareness, perseverance, respect for property, and social justice.

INTEGRITY

Integrity is defined as the unity of thought, word and deed (honesty) and open mindedness. It includes the capacity to communicate the factual information so that others can make well-informed decisions. It yields the person's peace of mind, and hence adds strength and consistency in character, decisions, and actions. This paves way to one's success. It is one of the self-direction virtues. It enthuse people not only to execute a job well but to achieve excellence in performance. It helps them to own the responsibility and earn self-respect and recognition by doing the job. Moral integrity is defined as a virtue, which reflects a consistency of one's attitudes, emotions, and conduct in relation to justified moral values. Integrity comes in many forms, but honesty and dependability are two traits that are expected in most workplace situations.

Without responsible behaviour, distrust can make a work environment tense and uncomfortable. A strong work ethic shows co-workers and clients that you're reliable and take your responsibilities seriously. Polite communication, respectable behavior and fiscal responsibility also help you stand out as a trustworthy employee.

EXAMPLES OF INTEGRITY AT WORKPLACE

The biggest workplace challenge is said to be the employee's work ethics showing up to work every day (interest in work and attendance), showing up to work on time (punctuality), taking pride in the quality of their work, commitment to the job, and getting along with others. This situation demands inculcation of good character in the workplace by employees.

Character It is a characteristic property that defines the behavior of an individual. It is the pattern of virtues (morally-desirable features). Character includes attributes that determine a person's moral and ethical actions and responses. It is also the ground on which morals and values blossom. People are divided into several categories, according to common tendencies such as ruthless, aggressiveness, and ambition, constricting selfishness, stinginess, or cheerfulness, generosity and goodwill. Individuals vary not only in the type of their character but also in the degree. Those whose lives are determined and directed by the prevailing habits, fashions, beliefs, attitudes, opinions and values of the society in which they live have at best a developed social as opposed to an individual character.

Follow Institution Policies Abiding by institution policies is a powerful way to demonstrate integrity. Cutting corners and neglecting to follow workplace regulations can lead to mistakes, problems and even dangerous situations. Your willingness to properly record financial transactions, safely dispense of hazardous or toxic materials, follow Institute protocol for dealing with stake holders, perform clean-up or set-up procedures and properly maintain equipment shows others that you're not just looking for the easy way out. Establishing yourself as a trustworthy worker who submits to Institute policies shows your principal and co-employees and students that you'll faithfully carry out your duties.

SERVICE LEARNING

Service-learning seeks to engage individuals in activities that combine both community service and academic learning. Because service-learning programs are typically rooted in formal course, the service activities are usually based on particular curricular concepts that are being taught. Service-learning is a teaching method which combines community service with academic instruction as it focuses on critical, reflective thinking and civic responsibility. Service-learning programs involve students in organized community service that addresses local needs, while

developing their academic skills, sense of civic responsibility, and commitment to the community.

Service-Learning Program Provides Educational Experiences: Under which students learn and develop through active participation in thoughtfully organized service experiences that meet actual community needs and that are coordinated in collaboration with school and community.

The engineering student analyzing and executing a socially-relevant project is another example of service learning. The service learning is a methodology falling under the category of experiential education. It is one of the forms of experiential learning and community service opportunities. It is distinguished in the following ways:

1. **Connection to curriculum:** Integrating the learning into a service project is a key to successful service learning. Academic ties should be clear and built upon existing disciplinary skills.
2. **Learner's voice:** Beyond being actively engaged in the project, trainees have the opportunity to select, design, implement, and evaluate their service activity.
3. **Reflection:** Structured opportunities are created to think, talk, and write about the service experience. The balance of reflection and action allows the trainee to be constantly aware of the impact of their work.
4. **Partners in the community:** Partnership with community agencies are used to identify genuine needs, provide mentorship, and contribute input such as labor and expertise towards completing the project.

SERVICE-LEARNING BENEFITS

Service-Learning benefits students by

- Linking theory to practice
- Deepening understanding of course materials
- Enhancing the sense of civic responsibility through civic engagement
- Allowing students to explore possible career paths
- Stressing the importance of improving the human condition
- Developing relevant career-related skills
- Providing experience in group work and interpersonal communication
- Promoting interaction with people from diverse backgrounds
- Instilling a sense of empowerment that enhances self-esteem

Service-Learning benefits faculty by

- Providing exciting new ways to teach familiar material

- Offering professional development challenges
- Engaging faculty in meaningful interactions with the community at large
- Encouraging faculty to form close, interactive, mentoring relationships with students
- Reminding faculty of the direct consequences of their teaching for society
- Connecting faculty across academic disciplines through a shared approach to teaching and learning process.

CIVIC VIRTUE:

Civic virtues are the moral duties and rights, as a citizen of the village or the country or an integral part of the society and environment. An individual may exhibit civic virtues by voting, volunteering, and organizing welfare groups and meetings.

The duties are

- To pay taxes to the local government and state, in time.
- To keep the surroundings clean and green.
- Not to pollute the water, land, and air by following hygiene and proper garbage disposal. For example, not to burn wood, tyres, plastic materials, spit in the open, even not to smoke in the open, and not to cause nuisance to the public, are some of the civic (duties) virtues.
- To follow the road safety rules.

On the other hand, the rights are:

- To vote the local or state government.
- To contest in the elections to the local or state government.
- To seek a public welfare facility such as a school, hospital or a community hall or transport or communication facility, for the residents.
- To establish a green and safe environment, pollution free, corruption free, and to follow ethical principles. People are said to have the right to breathe in fresh air, by not allowing smoking in public.
- People have inalienable right to accept or reject a project in their area. One has the right to seek legal remedy, in this respect, through public interest petition
- Civic virtues as indispensable for a self-governing administration.

These virtues are divided into four categories:

1. Civic Knowledge

Citizens must understand what the Constitution says about how the government is working, and what the government is supposed to do and what not to do. We must understand the basis of our responsibilities as citizens, besides duties and rights.

2. Self-Restraint

For citizens to live in a free society with limited government each citizen must be able to control or restrain himself; otherwise need a police state—that is, a dictatorial government to maintain safety and order.

3. Self-Assertion

Self-assertion means that citizens must be proud of their rights, and have the courage to stand up in public and defend their rights.

4. Self-Reliance

Citizens who cannot provide for themselves will need a large government to take care of them. Once citizens become dependent on government for their basic needs, the people are no longer in a position to demand that government act within the confines of the Constitution. Selfreliant citizens are free citizens in the sense that they are not dependent on others for their basic needs.

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:

- Recognize and accept the existence of other persons as human beings, because they have a right to live, just as you have.
- 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. Some people may wait and watch as fun, if one falls, claiming that they know others' mistake before and that they will fall!
- Appreciate colleagues and subordinates on their positive actions. Criticize constructively and encourage them. They are bound to improve their performance, by learning properly and by putting more efforts.
- Show goodwill 'on others. Love others. Allow others to grow. Basically, the goodwill reflects on the originator and multiplies itself on everybody. This will facilitate co linearity, focus, coherence, and strength to achieve the goals.

LIVING PEACEFULLY

- To live peacefully, one should start install peace within (self). Charity begins at home. Then one can spread peace to family, organization where one works, and then to the world, including the environment. Only who are at peace can spread peace. You can't gift an article which you do not possess. The essence of oriental philosophy is that one

should not fight for peace. It is oxymoron. War or peace can be won only by peace, and not by wars!

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

Nurture

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

Get

- Good health/body (Physical strength for service to enjoy the academic environment in the institution)

Act

- Help the needy with head, heart, and hands (charity). Service to the poor is considered holier than the service to God. Not hurting and torturing others physically, verbally, or mentally.

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

- Conducive environment (safe, ventilated, illuminated and comfortable).
- Secured job and motivated with recognition and reward.
- Absence of threat or tension by pressure due to limitations of money or time
- Absence of unnecessary interference or disturbance, except as guidelines.
- Healthy labor relations and family situations.
- Service to the needy (physically and mentally-challenged) with love and sympathy.

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. 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 family, fraternity, community, country and in international councils.

SHARING:

Primarily, caring influences ‘_sharing’. Sharing is a process that describes the transfer of knowledge (teaching, learning, and information), experience (training), commodities (material possession) and facilities with others. The transfer should be genuine, legal, positive, voluntary, and without any expectation in return. However, the proprietary information should not be shared with outsiders. Through this process of sharing, experience, expertise, wisdom and other benefits reach more people faster. Sharing is voluntary and it can’t be driven by force, but motivated successfully through ethical principles. In short, sharing is charity

For the humanity, sharing is a culture. The happiness and wealth are multiplied and the crimes and sufferings are reduced, by sharing. It paves the way for peace and obviates militancy. Philosophically, the sharing maximizes the happiness for all the human beings. In terms of psychology, the fear, divide, and distrust between the haves and have-nots disappear. Sharing not only paves the way to prosperity, early and easily, and sustains it. Economically speaking, benefits are maximized as there is no wastage or loss, and everybody gets one’s needs fulfilled and satisfied. Commercially speaking, the profit is maximized. Technologically, the productivity and utilization are maximized by sharing.

HONESTY:

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

- Truthfulness
- Trustworthiness.

Truthfulness is to face the responsibilities upon telling truth. One should keep one’s word or promise. By admitting one’s mistake committed (one needs courage to do that!), it is easy to fix them. Reliable engineering judgment, maintenance of truth, defending the truth, and communicating the truth, only when it does well to others, are some of the reflections of truthfulness. But trustworthiness is maintaining integrity and taking responsibility for personal performance. People abide by law and live by mutual trust. They play the right way to win, according to the laws or rules (legally and morally). They build trust through reliability and authenticity. They admit their own mistakes and confront unethical actions in others and take tough and principled stand, even if unpopular.

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

- Beliefs (intellectual honesty).
- Communication (writing and speech).
- (c) Decisions (ideas, discretion).
- (d) Actions (means, timing, place, and the goals). And

- (e) Intended and unintended results achieved.
- As against this, some of the actions of an engineer that leads to dishonesty are:
- **Lying:** Honesty implies avoidance of lying. An engineer may communicate wrong or distorted test results intentionally or otherwise. It is giving wrong information to the right people.
- **Deliberate deception:** An engineer may judge or decide on matters one is not familiar or with insufficient data or proof, to impress upon the customers or employers. This is a self deceit.
- **Withholding the information:** It means hiding the facts during communication to one's superior or subordinate, intentionally or otherwise.
- **Not seeking the truth:** Some engineers accept the information or data, without applying their mind and seeking the truth.
- **Not maintaining confidentiality:** It is giving right information to wrong people. The engineers should keep information of their customers/clients or of their employers confidential and should not discuss them with others.
- **Giving professional judgment under the influence of extraneous factors** such as personal benefits and prejudice. The laws, experience, social welfare, and even conscience are given a go-bye by such actions. Certainly this is a higher-order crime.

COURAGE:

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

- Physical courage,
- Social courage, and
- Intellectual courage.

In physical courage, the thrust is on the adequacy of the physical strength, including the muscle power and armaments. People with high adrenalin, may be prepared to face challenges for the mere thrill or driven by a decision to excel. The social courage involves the decisions and actions to change the order, based on the conviction 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. In professional ethics, courage is applicable to the employers, employees, public, and the press.

Look before you leap. One should perform Strengths, Weakness, Opportunities, and Threat (SWOT) analysis. Calculate (estimate) the risks, compare with one's strengths, and anticipate the end results, while taking decisions and before getting into action. Learning from the past helps. Past experience (one's own or borrowed!) and wisdom gained from self-study or others will prepare one to plan and act with self-confidence, succeed in achieving the desired ethical goals

through ethical means. Opportunities and threat existing and likely to exist in future are also to be studied and measures to be planned.

This anticipatory management will help anyone to face the future with courage.

VALUING TIME:

Time is rare resource. Once it is spent, it is lost forever. It can't 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.

The history of great reformers and innovators have stressed the importance of time and valuing time. The proverbs, Time and tide wait for nobody and Procrastination is the thief of time- amply illustrate this point.

An anecdote to highlight the value of time is as follows: To realize the value of one year, ask the student who has failed in the examinations; To realize the value of one month, ask the mother who has delivered a premature baby; to realize the value of one week, ask the editor of weekly; to realize the value of one day, ask the daily-wage laborer; to realize now the value of one hour, ask the lovers longing to meet; to realize the value of one minute, ask a person who has missed the train; to realize the value of one second, ask the person who has survived an accident; to realize the value one milli-second, ask the person who has won the bronze medal in Olympics; to realize the value of one micro second, ask the NASA team of scientists; to realize the value of one nano-second, ask a Hardware engineer!; If you have still not realized the value of time, wait; are you an Engineer?

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.

Willingness to understand others, think and act together and putting this into practice, is cooperation. Cooperation promotes co linearity, coherence (blend), co-ordination (activities linked in sequence or priority) and the synergy (maximizing the output, by reinforcement). The whole is more than the sum of the individuals. It helps in minimizing the input resources (including time) and maximizes the outputs, which include quantity, quality, effectiveness, and efficiency.

The impediments to successful cooperation are:

- Clash of ego of individuals.
- Lack of leadership and motivation

Conflicts of interests, based on region, religion, language, and caste. Ignorance and lack of interest. By careful planning, motivation, leadership, fostering and rewarding team work, professionalism and humanism beyond the divides, training on appreciation to different cultures, mutual understanding cooperation' can be developed and also sustained.

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.

This is a basic requirement for any profession. For example, a design engineer shall exhibit a sense of commitment, to make his product or project designed a beneficial contribution to the society. Only when the teacher (Guru) 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. This is bound to add wealth to oneself, one's employer, society, and the nation at large.

EMPATHY:

Empathy is social radar. Sensing what others feel about, without their open talk, is the essence of empathy. 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. 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. This is an essential ingredient for good human relations and transactions.

SELF-CONFIDENCE:

Certainty in one's own capabilities, values, and goals, is self-confidence. These people are usually positive thinking, flexible and willing to change. They respect others so much as they respect themselves. Self-confidence is positive attitude, wherein the individual has some positive and realistic view of himself, with respect to the situations in which one gets involved. 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 natural or 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:

- A self-assured standing

- Willing to listen
- To learn from others and adopt (flexibility),
- Frank to speak the truth
- Respect others efforts and give due credit.

CHARACTER:

It is a characteristic property that defines the behavior of an individual. It is the pattern of virtues (morally-desirable features). Character includes attributes that determine a person's moral and ethical actions and responses. It is also the ground on which morals and values blossom. People are divided into several categories, according to common tendencies such as ruthless, aggressiveness, and ambition, constricting selfishness, stinginess, or cheerfulness, generosity and goodwill. Individuals vary not only in the type of their character but also in the degree. Those whose lives are determined and directed by the prevailing habits, fashions, beliefs, attitudes, opinions and values of the society in which they live have at best a developed social as opposed to an individual character. Following types of characters should be followed by the engineers.

- Active (great and the mediocre),
- The apathetic (purely apathetic or dull), and
- The intelligent

Education and Character

The aim of education is not only the cultivation of the intellect but also the formation of moral character. Increased intelligence or physical skill may as easily be employed to the detriment or benefit of the community, if not accompanied by improved will. It is the function of ethics to determine the ideals of human character.

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. This is said to be the great virtue of Indian philosophy for Indians. Sometimes, spirituality includes the faith or belief in supernatural power/ God, regarding the worldly events. It functions as a fertilizer for the soil character' to blossom into values and morals.

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 is motivation as it encourages the colleagues to perform better. Remember, lack of motivation leads to isolation. Spirituality is also energy: Be energetic and flexible to adapt to challenging and changing situations. Spirituality is flexibility as well. One should not be too dominating. Make space for everyone and learn to recognize and accept people the way they are. Variety is the order of the day. But one can influence their mind to think and act together. Spirituality is also fun. Working is okay, but you also need to have fun in office to keep yourself charged up. Tolerance and empathy are the reflections of spirituality. Blue and saffron colors are said to be associated with spirituality.

PART-II

PROFESSIONAL ETHICS

INTRODUCTION

Engineers have an ethical and social responsibility to themselves, their clients and society. Practically (although there is much debate about this), engineering ethics is about balancing cost, schedule, and risk. Engineering ethics is a means to increase the ability of concerned engineers, managers, citizens and others to responsibly confront moral issues raised by technological activities. The awareness of moral issues and decisions confronting individuals and organizations are involved in Engineering & Technology.

ENGINEERING ETHICS: WHY STUDY ENGINEERING ETHICS?

Training In Preventive Ethics

- **Stimulating the moral** imagination
- **Recognizing ethical issues**
- **Developing analytical skills**
- **Eliciting a sense of responsibility**
- **Tolerating disagreement and ambiguity**

Obstruction to Responsibility

- **Self-interest.**
- **Fear.**
- **Self-deception.**
- **Ignorance.**
- **Egocentric tendencies.**
- **Microscopic vision.**
- **Groupthink**

Clearly Wrong Engineering Practices

- **Lying**
- **Deliberate deception**
- **Withholding information**
- **Failing to adequately promote the dissemination of information**
- **Failure to seek out the truth**
- **Revealing confidential or proprietary information**
- **Allowing one's judgment to be corrupted.**

Senses of Expression of Engineering Ethics:

- Ethics is an activity and area of inquiry. It is the activity of understanding moral values, resolving moral issues and the area of study resulting from that activity.
- When we speak of ethical problems, issues and controversies, we mean to distinguish them from non-moral problems.
- Ethics is used to refer to the particular set of beliefs, attitudes and habits that a person or group displays concerning moralities.
- Ethics and its grammatical variants can be used as synonyms for morally correct.

DIFFERENCE IN MORALITY & ETHICS

Morality	Ethics
More general and prescriptive based on customs and traditions	Specific and descriptive. It is a critical reflection on morals.
More concerned with the results of wrong action, when done.	More concerned with results of a right action, when not done.
Thrust is on judgment and punishment, in the name of God or by laws	Thrust is on influence, education, training through codes, guidelines, and correction
In case of conflict between two, morality is given top priority, because the damage is more. It is more common and basic.	Less serious, hence second priority only. Less common. But relevant today, because of complex interactions in the modern society.
Example: Character flaw, corruption, extortion, and crime.	Example: Notions or beliefs about manners, tastes, customs, and towards laws.

THREE TYPES OF ETHICS

Common Morality

Common morality is the set of moral beliefs shared by all Management students. It is the basis for the other types of morality. In ethics, we usually think of such principles as Ahinsa (no harm physically or mentally to or killing others or even suicides), Satyam (no lies and break of promises), Contentment (no greed, cheating or stealing) etc. We don't question these principles.

Three characteristics of common morality are identified as follows:

- Many of the principles of common morality are negative. The common morality is designed primarily to protect individuals from different types of violations or invasions of their personhood by others, such as killing, lying or stealing.
- Although the common morality is basically negative, it certainly contains positive or **aspirational features in principles such as, 'Prevent killing, Prevent deceit and prevent cheating'**. Further it includes even more positive principles, **such as 'Help the needy, Promote human happiness, and protect the environment'**. This distinction between the positive and negative aspects of common morality will be important in discussing professional ethics.

Personal Morality

Personal ethics or personal morality is the set of moral beliefs that a person holds. Our personal moral beliefs mostly and closely run parallel to the principles of common morality, such as ahinsa, satyam and contentment. But our personal moral beliefs may differ from common morality in some areas, especially where common morality appears to be unclear or in a state of change. Thus, we may oppose abortion, even though common morality may not be clear on the issue.

Professional Ethics

Professional ethics is the set of standards adopted by professionals. Every profession Has its professional ethics: medicine, law, pharmacy etc. Management ethics is the set of ethical standards that applies to the management profession. Some of the important characteristics of professional ethics are:

Formal code unlike common morality and personal morality, professional ethics is usually stated in a formal code. Many such codes are promulgated by various components of the profession.

Focus The professional codes of ethics of a given profession focus on the issues that are important in that profession. Professional codes in the legal profession concern themselves with questions such as perjury of clients and the unauthorized practice of law.

Precedence In a professional relationship, professional ethics takes precedence over personal morality. This characteristic has an advantage, but it can also produce complications. The advantage is that a client can justifiably have some expectations of a professional, even if the client has no knowledge of the personal morality of the professional.

Restriction The professional ethics sometimes differs from personal morality in its degree of restriction of personal conduct. Sometimes professional ethics is more restrictive than personal morality, and sometimes it is less restrictive.

Two dimensional Professional ethics, like any ethics, has a negative as well as a positive dimension.

Being ethical has two aspects:

(A) preventing and avoiding evil, and (B) doing or promoting good.

Role morality This means the moral obligations based on special roles and relationships. For example, Parents having a set of obligations to their children, such as not to harm their children, nourish them and promote their flourishing. A political leader has a role morality, the obligation to promote the well-being of citizens. Professional ethics is one of the examples of role morality.

WORK ETHIC

Work ethics is defined as a set of attitudes concerned with the value of work, which forms the motivational orientation. It is a set of values based on hard work and diligence. It is also a belief in the moral benefit of work and its ability to enhance character. A work ethic may include being reliable, **having initiative, or pursuing new skills. 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.

Workers exhibiting a good work ethic in theory should be selected for better positions, more responsibility and ultimately promotion. Workers who fail to exhibit a good work ethic may be regarded as failing to provide fair value for the wage the employer is paying them and should not be promoted or placed in positions of greater responsibility. Work ethic is not just hard work but also a set of accompanying virtues, whose crucial role in the development and sustaining of free markets.

SENSES OF ENGINEERING ETHICS

The word ethics has different meanings but they are correspondingly related to each other. In connection with that, engineering ethics has also various senses which are related to one another. Comparison of the senses of Ethics and Engineering Ethic:

Ethics	Engineering Ethics
Ethics is an activity which concerns with making investigations and knowing about moral values, finding solutions to moral issues and justifying moral issues and justifying moral judgments	Like the ethics, engineering ethics also aims at knowing moral values related to engineering, finding accurate solutions to the moral problems in engineering and justifying moral judgments of engineering.
Ethics is a means of contrasting moral questions from non-moral problems.	Engineering Ethics gives a total view of the moral problems and how to solve these issues specifically related to engineering field
Ethics is also used as a means of describing the beliefs, attitudes and habits related to an individual's or group's morality. Eg. : Ethics given in the Bhagavat Gita or the Bible or the Quran	Engineering ethics is also using some currently accepted codes and standards which are to be followed by group of engineers and engineering societies.
As per the definition of dictionaries moral principles' is about the actions and principles of conduct of the people. i.e. ethical or unethical.	Engineering ethics also concerns with discovering moral principles such as obligation, rights and ideals in engineering and by applying them to take a correct decision.

VARIETY OF MORAL ISSUES:

There are so many engineering disasters which are greater / heavier than the level of acceptable or tolerable risk. Therefore, for finding and avoiding such cases such as nuclear plant accident at Chernobyl (Russia), Chemical plant at Bhopal (India) where a big disaster of gas leakage occurred in 1980, which caused many fatal accidents. In the same way, oil spills from some oil extraction plants (the Exxon Valdez plant), hazardous waste, pollution and other related services, natural disasters like floods, earthquake and danger from using asbestos and plastics are some more cases for engineering disasters. These fields should be given awareness of engineering ethics. Hence, it is essential for engineers to get awareness on the above said disasters. They should also know the importance of the system of engineering. When malfunction of the system

is a rapid one, the disaster will be in greater extent and can be noticed immediately. When they are slow and unobserved, the impact is delayed. So, the engineers should not ignore about the functions of these systems. These cases also explain and make the engineers to be familiar with the outline of the case in future and also about their related ethical issues.

APPROACHES TO ENGINEERING ETHICS:

Micro-Ethics: This approach stresses more about some typical and everyday problems which play an important role in the field of engineering and in the profession of an engineer.

Macro-Ethics: This approach deals with all the social problems which are unknown and suddenly burst out on a regional or national level.

So, it is necessary for an engineer to pay attention on both the approaches by having a careful study of how they affect them professionally and personally. The engineers have to tolerate themselves with the everyday problems both from personal and societal point of view.

Some cases with which different areas covered by engineering ethics:

An inspector finds a faulty part in the manufacture of a machine, which prevents the use of that machine for a longer period. But his superior, takes this as a minor mistake and orders that the faulty part to be adjusted so that the delay in the process has to be avoided. But the inspector doesn't want this and so he is threatened by the supervisor.

An electronic company applies for a permit to start a Nuclear Power Plant. When the licensing authority comes for visit, they enquire the company authorities on the emergency measures that have been established for safety of the surroundings. The engineers inform them about the alarm system and arrangements have been made in local hospitals for the treatment of their employees and they have no plan for the surrounding people. They also inform that it is the responsibility of the people. A Yarn Dyeing company which dumps its wastes in the nearby river. It causes heavy damage to the people those who are using the river. The plant engineers are aware of this, but they do not change the disposal method because their competitors also doing similarly as it happens to be a cheaper. They also say that it is the responsibility of the local government.

The above given examples clearly explain how the ethical problems arise most often because of wrong judgments and expectations of engineers. These necessitate for establishing some codes of conduct which has to be imposed on engineers' decisions on the basis of ethical view.

MODELS OF PROFESSIONAL ROLES

It is understood that an engineer has to play many roles while exercising his professional obligations. Some of the professional roles or models are given below:

Engineers as Saviors:

It is believed that engineers hold the key for any improvements in society through technological developments. Thus some people consider engineer as a savior because they redeem society from poverty, inefficiency, waste and the hardships drudgery of manual labor.

Engineers as Guardians:

Engineers know the direction in which technology should develop and the speed at which it should move. Thus many people agree the role of engineers as guardians, as engineers guard the best interests of society.

Engineers as Bureaucratic Servants:

The engineer's role in the management is to be the servant who receives and translates the directives of management into solid accomplishments.

Engineers as Social Servants:

As we know, engineers have to play the role of social servants to receive society's directives and to satisfy society's desires.

Engineers as Social Enablers and Catalysts:

Besides merely practising the management's directives, the engineers have to play a role of creating a better society. Also they should act as catalysts for making social changes. Sometimes engineers have to help the management and the society to understand their needs and to make decisions about desirable technological development.

Engineers as Game Players :

In actual practice, engineers are neither servants nor masters of anyone. In fact, they play the economic game rules, which may be effective at a given time. Like managers, the engineers aim is also to play successfully within the organization and moving ahead in a competitive world.

THEORIES ABOUT RIGHT ACTION

The main objectives of right action are

- To understand the distinction between a theory of Right and a theory of Good.
- To understand Utilitarianism, Ethical Egoism, and Consequentialism
- To know how rule utilitarianism differs from act utilitarianism;

—**Utilitarianism is the moral philosophy** putting that at the centre of things. It concentrates upon general well-wishing or benevolence, or solidarity or identification with the pleasure and pain or welfare of people as a whole. The good is identified with the greatest happiness of the greatest number, and the aim of action is to advance the good (this is known as the principle of Utility). We should always do whatever will produce the greatest possible balance of happiness over unhappiness for everyone who will be affected by **our action**. **Utilitarianism is often summed up as doing _the greatest good for the greatest number.**

Theories of Rights Action are philosophical concepts concerned with human nature and their rights and duties to lead the life with ethical values. The concepts mainly focus on individual person's actions and their consequences. There are different versions of rights action introduced by different ethicists during the eighteenth-century Enlightenment Era: utilitarianism; rights ethics, and duty.

Our task here is to define the concept of Rights Action. We may have different perspectives and understanding of the concepts. After having learnt the concepts: utilitarianism; liberty rights; welfare rights; and duty ethics we can theorize the concept of Right Action as the followings:

- Right action is the action which controls by law
- Right action considers to good consequences of action
- Right action is the action which is benefits to all students, teachers, society, industry etc.
- Right action is the consequences of action that is not violate the moral rule.

Other definitions: a right action is an act that is permissible for you to do. It may be either:

- a) an obligation act- is one that morality requires you to do,
- b) an optional act- an act not obligatory or wrong to do; it is not your duty.

USES OF ETHICAL THEORIES:

Ethical theories have so many uses. Out of them, the following three are the most important uses:

- Understanding moral dilemmas.
- Justifying professional obligations and ideas.
- Relating ordinary and professional morality

Global Issues

Globalization:

Globalization means integration of countries through commerce, transfer of technology, and exchange of information and culture. In a way, it includes acting together and interacting economies through trade, investment, loan, development schemes and capital across countries. In a different sense, these flows include knowledge, science, technology, skills, culture, information, and entertainment, besides direct human resource, tele-work, and outsourcing. This interdependence has increased the complex tensions and ruptures among the nations. For the engineers, the issues such as multinational organizations, computer, internet functions, military development and environmental ethics have assumed greater importance for their very sustenance and progress.

Multinational Corporations :

Organizations who have established business in more than one country, are called multinational corporation. The headquarters are in the home country and the business is extended in many host countries. The Western organizations doing business in the less economically developed (developing, and overpopulated) countries gain the advantage of inexpensive labor, availability of natural resources, conducive-tax atmosphere, and virgin market for the products. At the same time, the developing countries are also benefited by fresh job opportunities, jobs with higher remuneration and challenges, transfer of technology, and several social benefits by the wealth developed. But this happens invariably with some social and cultural disturbance. Loss of jobs for the home country, and loss or exploitation of natural resources, political instability for the host countries are some of the threats of globalization.

International Human Rights:

To know what are the moral responsibilities and obligations of the multinational corporations operating in the host countries, let us discuss with the framework of rights ethics. Common minimal rights are to be followed to smoothen the transactions when the engineers and employers of MNCs have to interact at official, social, economic and sometimes political levels. At international level, the organizations are expected to adopt the minimum levels of

- (a) Values, such as mutual support, loyalty, and reciprocity,
- (b) The negative duty of refraining from harmful actions such as violence and fraud, and
- (c) Basic fairness and practical justice in case of conflicts.

The ten international rights to be taken care of, in this context are:

1. Right of freedom of physical movement of people
2. Right of ownership of properties
3. Freedom from torture
4. Right to fair trial on the products
5. Freedom from discrimination on the basis of race or sex. If such discrimination against women or minorities is prevalent in the host country, the MNC will be compelled to accept. MNCs may opt to quit that country if the human rights violations are severe.
6. Physical security. Use of safety gadgets have to be supplied to the workers even if the laws of the host country do not suggest such measures.
7. Freedom of speech and forming association
8. Right to have a minimum education
9. Right to political participation
10. Right to live and exist (i.e., coexistence). The individual liberty and sanctity of the human life are to be respected by all societies.

Technology Transfer :

It is a process of moving technology to a new setting and implementing it there. Technology includes hardware (machines and installations) and the techniques (technical, organizational, and managerial skills and procedures). It may mean moving the technology applications from laboratory to the field/factory or from one country to another. This transfer is effected by governments, organizations, universities, and MNCs.

Appropriate Technology:

Identification, transfer, and implementation of most suitable technology for a set of new situations, is called appropriate technology. Technology includes both hardware (machines and installations) and software (technical, organizational and managerial skills and procedures). Factors such as economic, social, and engineering constraints are the causes for the modification of technology. Depending on the availability of resources, physical conditions (such as temperature, humidity, salinity, geographical location, isolated land area, and availability of water), capital opportunity costs, and the human value system (social acceptability) which includes their traditions, beliefs, and religion, the appropriateness is to be determined.

For example, small farmers in our country prefer to own and use the power tillers, rather than the high-powered tractors or sophisticated harvesting machines. On the other hand, the latest technological device, the cell phones and wireless local loop phones have found their way into remote villages and hamlets, than the landline telephone connections. Large aqua-culture farms should not make the existing fishermen jobless in their own village. The term appropriate is value based and it should ensure fulfillment of the human needs and protection of the environment.

Environmental Ethics:

Environmental ethics is the study of (a) moral issues concerning the environment, and (b) moral perspectives, beliefs, or attitudes concerning those issues. Engineers in the past are known for their negligence of environment, in their activities. It has become important now that engineers design eco-friendly tools, machines, sustainable products, processes, and projects. These are essential now to (a) ensure protection (safety) of environment (b) prevent the degradation of environment, and (c) slow down the exploitation of the natural resources, so that the future generation can survive.

The American Society of Civil Engineers (ASCE) code of ethics, has specifically requires that “engineers shall hold paramount the safety, health, and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of professional duties” The term sustainable development emphasizes on the investment, orientation of technology, development and functioning of organizations to meet the present needs of people and at the same time ensuring the future generations to meet their needs.

Engineers as experimenters have certain duties towards environmental ethics, namely:

- 1.Environmental impact assessment: One major but sure and unintended effect of technology is wastage and the resulting pollution of land, water, air and even space. Study how the industry and technology affects the environment.
2. Establish standards: Study and to fix the tolerable and actual pollution levels.
3. Counter measures: Study what the protective or eliminating measures are available for immediate implementation