# MODULE 2

- Engineering Ethics & Professionalism. Senses of Engineering Ethics - Variety of moral issues- Types of inquiry- Moral dilemmas –Moral Autonomy – Kohlberg's theory- Gilligan's theory- Consensus and Controversy-Profession and Professionalism- Models of professional roles-Theories about right action –Self interest-Customs and Religion- Uses of Ethical Theories.

- Engineering Ethics is the activity and discipline aimed at
  - understanding the moral values that ought to guide engineering profession or practice,
  - resolving moral issues in engineering, and
  - justifying the moral judgments in engineering. It deals with set of moral problems and issues connected with engineering.

# SENSES OF ENGINEERING ETHICS

- There are two different senses (meanings) of engineering ethics:
  - Normative sense
  - Descriptive senses.

- NORMATIVE SENSE
  - The normative sense include:
    - Knowing moral values, finding accurate solutions to moral problems and justifying moral judgments in engineering practices,
    - Study of decisions, policies, and values that are morally desirable in the engineering practice and research.
    - Using codes of ethics and standards and applying them in their transactions by engineers.
- DESCRIPTIVE SENSE
  - The descriptive sense refers to what specific individual or group of engineers believe and act, without justifying their beliefs or actions.

# VARIETY OF MORAL ISSUES

- Resource Crunch
- Opportunity
- Attitude

# Resource Crunch

- Due to pressure, through time limits, availability of money or budgetary constraints, and technology decay or obsolescence.
- Pressure from the government to complete the project in time (e.g., before the elections), reduction in the budget because of sudden war or natural calamity (e.g., Tsunami) and obsolescence due technology innovation by the competitor lead to manipulation and unsafe and unethical execution of projects.
- Solution
  - Involving individuals in the development of goals and values and developing policies that allow for individual diversity, dissent, and input to decision-making will prevent unethical results.

# Opportunity

- Double standards or behavior of the employers towards the employees and the public
- Management projecting their own interests more than that of their employees.
- Emphasis on results and gains at the expense of the employees, and
- Management by objectives, without focus on empowerment and improvement of the infrastructure.
- Solution
  - This is best encountered by developing policies that allow ‘conscience keepers’ and whistle blowers and appointing ombudsman, who can work confidentially with people to solve the unethical problems internally.

# Attitude

- Poor attitude of the employees set in due to
  - Low morale of the employees because of dissatisfaction and downsizing,
  - Absence of grievance redressal mechanism,
  - Lack of promotion or career development policies or denied promotions,
  - Lack of transparency,
  - Absence of recognition and reward system, and
  - Poor working environments.
- Solution
  - Giving ethics training for all, recognizing ethical conduct in work place, including ethics in performance appraisal, and encouraging open discussion on ethical issues, are some of the directions to promote positive attitudes among the employees

# TYPES OF INQUIRIES

- Normative Inquiry
- Conceptual Inquiry
- Factual or Descriptive Inquiry

# Normative Inquiry

- It seeks to identify and justify the morally-desirable norms or standards that should guide individuals and groups.
- It also has the theoretical goal of justifying particular moral judgments.
- Normative questions are about what ought to be and what is good, based on moral values
- Eg:
  - How far does the obligation of engineers to protect public safety extend in any given situation?
  - When, if ever, should engineers be expected to blow whistle on dangerous practices of their employers?
  - When and why is the government justified in interfering with the organisations?

# Conceptual Inquiry

- It is directed to clarify the meaning of concepts or ideas or principles that are expressed by words or by questions and statements.
- Eg:
  - What is meant by safety?
  - How is it related to risk?
  - What is a bribe?
  - What is a profession?

# Factual or Descriptive Inquiry

- It is aimed to obtain facts needed for understanding and resolving value issues.
- Researchers conduct factual inquiries using mathematical or statistical techniques.
- The inquiry provide important information on business realities, engineering practice, and the effectiveness of professional societies in fostering moral conduct, the procedures used in risk assessment, and psychological profiles of engineers.
- The facts provide not only the reasons for moral problems but also enable us to develop alterative ways of resolving moral problems
- Eg:
  - How were the benefits assessed?
  - What are procedures followed in risk assessment?
  - What are short-term and long-term effects of drinking water being polluted? and
  - Who conducted the tests on materials?

# MORAL DILEMMA

- Dilemmas are situations in which moral reasons come into conflict, or in which the application of moral values are problems, and one is not clear of the immediate choice or solution of the problems.
- Moral reasons could be rights, duties, goods or obligations.
- These situations do not mean that things had gone wrong, but they only indicate the presence of moral complexity.
- This makes the decision making complex.
- For example, a person promised to meet a friend and dine, but he has to help his uncle who is involved in an accident — one has to fix the priority.

- The three situations leading to moral dilemmas are:
  - The problem of *vagueness*: One is unable to distinguish between good and bad (right or wrong) principle. Good means an action that is obligatory.
  - The problem of *conflicting reasons*: One is unable to choose between two good moral solutions. One has to fix priority, through knowledge or value system.
  - The problem of *disagreement*: There may be two or more solutions and none of them mandatory. These solutions may be better or worse in some respects but not in all aspects. One has to interpret, apply different morally reasons, and analyse and rank the decisions. Select the best suitable, under the existing and the most probable conditions.

# Steps to Solve Dilemma

- Identification of the moral factors and reasons. The clarity to identify the relevant moral values from among duties, rights, goods and obligations is obtained (conceptual inquiry).
- Collection of all information, data, and facts (factual inquiry) relevant to the situation.
- Rank the moral options i.e., priority in application through value system, and also as obligatory, all right, acceptable, not acceptable, damaging, and most damaging etc. For example, in fulfilling responsibility, the codes give prime importance to public safety and protection of the environment, as compared to the individuals or the employers (conceptual inquiry).
- Generate alternate courses of action to resolve the dilemma. Write down the main options and sub-options as a matrix or decision tree to ensure that all options are included.
- Discuss with colleagues and obtain their perspectives, priorities, and suggestions on various alternatives.
- Decide upon a final course of action, based on priority fixed or assumed. If there is no ideal solution, we arrive at a partially satisfactory or ‘satisficing’ solution.

# MORAL AUTONOMY

- Moral autonomy is defined as, decisions and actions exercised on the basis of moral concern for other people and recognition of good moral reasons.
- Moral autonomy means ‘self determinant or independent’.
- The autonomous people hold moral beliefs and attitudes based on their critical reflection rather than on passive adoption of the conventions of the society or profession.
- Moral autonomy may also be defined as a skill and habit of thinking rationally about the ethical issues, on the basis of moral concern.