Parul® University
NAAC A++
Career Development Cell

Ethics In Engineering

Semester 5 - Professionalism & Corporate Ethics

(303193304)

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Accepting & Sharing Responsibility

Learning Objectives

By the end of this lecture, students should be able to:

- To understand the multifaceted nature of responsibility in engineering contexts.
- To recognize the importance of both individual and collective responsibility among engineers.
- To develop an appreciation for the ethical implications of accepting or shirking responsibility for engineering decisions and their consequences.

Topics to be Covered

1. Introduction
2. Key Concept/Definitions
3. Content
4. Example
5. Activity
6. Conclusion
7. Learning outcome

Introduction

- Engineering projects, by their very nature, involve complex systems, numerous stakeholders, and significant potential impact on society and the environment.
- Consequently, responsibility in engineering is rarely straightforward; it involves accepting accountability for one's own actions, recognizing the collective duties of a team or organization, and understanding the chain of command.
- Ethically, engineers are bound not only to perform competently but also to take ownership of the outcomes, both positive and negative, of their work.

Key Concepts/Definitions:

- **Accountability:** The obligation to answer for one's actions and decisions, often implying blameworthiness for failure or praiseworthiness for success.
- **Responsibility (as a Duty):** The moral or legal obligation to ensure that certain tasks are performed or that certain outcomes are achieved.
  Causal Responsibility: Being responsible for an outcome because one's actions directly or indirectly caused it.
- **Moral Responsibility:** The degree to which an agent is morally blameworthy or praiseworthy for an action or its consequences.

Key Concepts/Definitions:

- **Professional Responsibility:** The specific duties and obligations that arise from one's role as a professional engineer, often codified in codes of ethics.
- **Collective Responsibility:** When a group or organization is held responsible for an outcome, often because no single individual can be solely blamed or praised, or because the outcome is a result of shared actions/decisions.
- **Chain of Command:** The hierarchical structure within an organization that defines reporting relationships and levels of authority, which often impacts where responsibility ultimately lies.

The Dynamics of Responsibility in Engineering

A. Individual Responsibility: Competence: Engineers are individually responsible for ensuring they possess the necessary skills and knowledge for tasks they undertake.

Diligence: Performing duties with care and attention to detail.

Honesty & Integrity: Being truthful in reports, data, and communications; not falsifying information.

The Dynamics of Responsibility in Engineering

- **Whistleblowing:** The individual moral responsibility to speak up when observing unethical or unsafe practices, even if it carries personal risk.

- **Accepting Blame & Learning:** Taking ownership of mistakes, acknowledging failures, and using them as learning opportunities rather than deflecting blame.

Content

B. Sharing Responsibility (Collective & Organizational):

Team Projects: In complex engineering projects, responsibility is often shared among team members. Each member is responsible for their part, and the team as a whole is responsible for the overall outcome.

Organizational Culture: Companies have a collective responsibility to foster an ethical environment, provide adequate resources, and support ethical decision-making.

Management's Role: Managers and senior engineers bear significant responsibility for the decisions of their teams, providing oversight, setting policies, and ensuring ethical conduct.

Content

B. Sharing Responsibility (Collective & Organizational):

- **Client & Public Responsibility:** Engineers and their organizations collectively hold responsibility for the safety, well-being, and trust of the public and clients impacted by their work.
- **Distributed Responsibility:** In complex systems, responsibility can be diffused across many individuals, departments, and even external entities (e.g., subcontractors, regulatory bodies). Identifying and allocating responsibility in such cases is ethically challenging.

Content

C. Challenges in Accepting/Sharing Responsibility:

Blame Culture: Fear of professional repercussions can lead to avoidance of responsibility.

Diffusion of Responsibility: In large organizations, it's easy for individuals to feel less personally responsible, assuming someone else will take care of it or that the blame will be spread thin.

Lack of Clear Authority: Ambiguity in roles and reporting lines can make it difficult to pinpoint who is responsible.

Content

- **External Pressures:** Budget constraints, tight deadlines, and competitive pressures can sometimes lead to shortcuts that compromise safety or quality, making it harder to uphold responsibility.

- **Ignorance/Lack of Awareness:** Not knowing the full potential consequences of actions or inactions.

Activity (for discussion)

- **Case Study Analysis:** Present a famous engineering disaster (e.g., Bhopal Gas Tragedy, Space Shuttle Challenger, Tacoma Narrows Bridge collapse) and discuss:
- Who held individual responsibility?
- Who held collective/organizational responsibility?
- Were responsibilities accepted or shirked? What were the ethical implications?

- **"My Role" Scenario:** Give students a hypothetical engineering project scenario (e.g., designing a new bridge, developing an AI system). Ask them to identify their individual responsibilities and how they would share/collaborate on responsibilities with a team.

Activity (for discussion)

Debate: "Is it always ethical to blow the whistle, even if it risks your career?" Discuss the individual and collective responsibilities involved.

Conclusion

- Accepting and sharing responsibility is a cornerstone of ethical engineering practice. It moves beyond mere technical competence to encompass moral accountability for the impact of engineering work.

- Engineers have both an individual duty to act ethically and a collective duty to ensure their teams and organizations uphold professional standards.

- Understanding the complexities of responsibility, particularly in large-scale projects, is vital for preventing harm, fostering trust, and ensuring that engineering serves the public good responsibly.

Learning Outcomes

- Students will be able to define and differentiate between individual, collective, causal, and moral responsibility in engineering.
- Students will be able to identify situations where responsibility is shared or diffused within engineering teams and organizations.
- Students will analyse real-world engineering scenarios to determine the ethical implications of accepting or failing to accept responsibility.
- Students will articulate strategies for promoting a culture of accountability and shared responsibility in engineering environments.

Related Video to the Topic

Title Suggestion: "The Ethics of Responsibility in Engineering" or "Engineering Disasters & Accountability"

Link Suggestion:

Search YouTube for documentaries or analyses of engineering failures that discuss accountability (e.g., "Challenger Disaster: Responsibility").

Look for talks or lectures on engineering ethics that specifically address the concept of distributed responsibility.

Example Search Query: "Engineering ethics accountability" or "moral responsibility in engineering failure"

Thank You