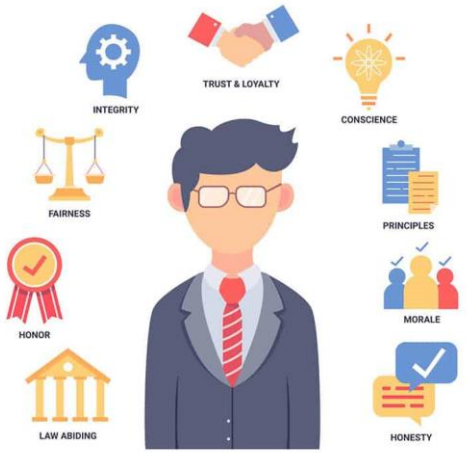
Reactor Design II-Ethics in Engineering



Week 14
Code of Ethics

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Introduction

- Definition: The AIChE Code of Ethics outlines the ethical standards for chemical engineers.
- Purpose: To guide professional conduct and ensure public trust.
- Scope:
- - Principles of professional ethics
- - Application in engineering practices

Topics to be Addressed

- Overview:
- 1. Importance of the AIChE Code of Ethics
- 2. Key Principles and Guidelines
- 3. Applications in Chemical Engineering
- 4. Case Studies
- 5. Promoting Ethical Practices

Objectives

- Purpose of this Presentation:
- - Explore the AIChE Code of Ethics
- - Highlight its relevance in engineering practices
- - Discuss practical applications and case studies
- - Promote ethical awareness in professional contexts

Importance of a Code of Ethics

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- Why a Code of Ethics?
- - Ensures professional accountability
- - Builds trust with the public and stakeholders
- - Promotes ethical decision-making
- Relevance in Chemical Engineering:
- - Safety and environmental protection
- - Integrity in research and practice

Key Principles of the AIChE Code of Ethics

- Main Principles:
- 1. Hold paramount the safety, health, and welfare of the public and protect the environment in performance of their professional duties.
- 2. Formally advise their employers or clients, and consider further disclosure, if an overriding moral issue arises.
- 3. Perform professional services only in areas of their competence.
- 4. Issue statements or present information only in an objective and truthful manner.
- 5. Act in professional matters for each employer or client as faithful agents or trustees, avoiding conflicts of interest.
- 6. Build their professional reputations on the merit of their services and not compete unfairly with others.
- 7. Continue their professional development throughout their careers and provide opportunities for the professional development of those under their supervision.
- 8. Never tolerate harassment.

Professional Responsibility

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- Responsibilities Include:
- - Maintaining honesty and integrity
- - Adhering to safety and environmental standards
- - Avoiding conflicts of interest
- Example: Reporting safety concerns even when under pressure.

Application in Chemical Engineering

- Scenarios:
- - Process safety and risk management
- - Environmental sustainability
- - Ethical research practices
- Example: Designing a process to minimize environmental impact.

Case Study 1 - Bhopal Gas Tragedy

- Background: Leak of methyl isocyanate gas in Bhopal, India (1984).
- Ethical Failures:
- - Negligence in safety measures
- - Lack of accountability
- - Cost-cutting at the expense of safety
- Lessons Learned: Importance of adhering to safety standards and ethical principles.

Case Study 2 - Flint Water Crisis

- Background: Lead contamination in Flint, Michigan's water supply.
- Ethical Issues:
- - Neglecting public welfare
- - Lack of transparency and accountability
- Outcome: Highlighted the need for professional responsibility and ethical conduct.

Ethical Challenges in Practice

- Examples of Challenges:
- - Balancing cost and safety
- - Managing conflicts of interest
- - Addressing whistleblowing scenarios
- Example: Reporting unethical practices despite potential repercussions.

Promoting Ethical Practices

- Strategies:
- - Encouraging ethical training programs
- - Establishing clear policies and standards
- - Fostering a culture of accountability
- Example: Implementing an ethics hotline for reporting concerns.

Tools for Ethical Decision-Making

- Frameworks Include:
- - Stakeholder analysis
- - Ethical decision-making models
- - Cost-benefit analysis
- Example: Evaluating the environmental impact of a new project.

AIChE Code of Ethics in Education

- Importance:
- - Instilling ethical awareness in students
- - Encouraging responsible research and innovation
- Methods:
- - Incorporating ethics into the curriculum
- - Hosting workshops and seminars

Future Ethical Challenges

- Emerging Issues:
- - Artificial intelligence in engineering
- - Climate change and sustainability
- - Biotechnology and genetic engineering
- Role of the Code of Ethics:
- - Providing guidance in uncharted territories

Comparison with Other Codes

- Examples:
- - NSPE Code of Ethics
- - ASME Code of Ethics
- Key Differences:
- - Focus areas and specific guidelines
- - Shared commitment to public welfare and integrity

Case Study 3 - Green Chemistry Innovations

- Success Story: Developing sustainable processes using green chemistry.
- Ethical Principles in Action:
- - Prioritizing environmental protection
- - Balancing innovation with ethical considerations

Encouraging Ethical Leadership

- Key Traits of Ethical Leaders:
- - Integrity
- - Accountability
- - Empathy
- Example: Leaders promoting safety culture in chemical plants.

Questions and Discussion

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- Prompt for Audience:
- - How can the AIChE Code of Ethics be better integrated into daily practices?
- - Share examples of ethical challenges you have encountered.
- Thank You!

Are you ready?

Summary

- Key Takeaways:
- - The AIChE Code of Ethics is foundational for professional conduct.
- - Ethical principles guide decision-making and ensure public trust.
- - Case studies highlight the importance of adhering to ethical standards.
- Call to Action: Foster ethical practices in engineering education and industry.