HVPE - II UNIT - II

Safety is a crucial aspect of engineering, it should be public safety, ethical codes, professional responsibilities etc.

→ planning / implementing / constructing in such a way that minimizes the risk to the people, property and the environments.

Safety and Risks in Engineering :-

→ crucial to ensure that projects do not harm the people property and environments.

Safety : refers to the conditions of being protected from harm or non-desirable outcomes. this means designing, constructing that minimize hazards and risk to acceptable levels.

Risk : is the possibility of suffering harm or loss.

Components of Risk

Hazard : A potential source of harm

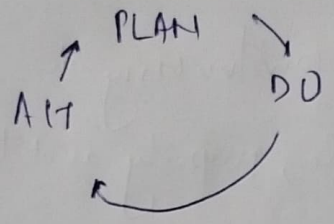
Exposure : The extends to which people property are exposed to harm.

Probability : The likelihood that hazards will cause harm

Severity : the extent of damage or injury.

Hazard, Exposure, Probability, Severity.

RISK ASSESSMENTS:- identifying, analyzing and evaluating risks.



Identifying Risk, Analysing, Evaluate, Mitigate, Monitor / Review

RISK AND COST: Managing risk involves incurring cost + decisions must be balance the costs of risk mitigation and potential benefits. (Risk + Cost)

→ interconnected.

Cost of Mitigation

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Implementing the mitigation Plan. Can be Expensive.

Cost Benefit Analysis.

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Engineers should also must balance the cost of risk mitigation against the potential cost of not addressing the risk.

cost of failure

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If Risk Mitigation Fails it is the higher cost including damage to property, loss of life

Risk Benefits Analysis:- Method to evaluate the trade-off b/w the risks and benefits of a particular actions or decisions. (3)

↳ Cost ≈ Benefits → Simple Terms

Steps
1. Identifies Risk And Benefits
2. Assess Risks → probability
3. Asses Benefits → Magnitude of each risk
4. Quantify → Assigning Numerical values to each Benefits likes financial + lives Saved
5. Comparision: Both Compare Risk & Benefits to determines the benefits outweigh the risks.

ENGINEER'S RESPONSIBILITY OF SAFETY:-

1. Designing Safe Systems
2. Adhering to Standards
3. Risk Assessments and Managements
4. Ethical Duty
5. Continuous Improvements.

* SOCIAL AND VALUE DIMENSIONS OF TECHNOLOGY:-

Impacts society and carries values dimensions that Can shape the shape of culture, ethical & socials norms.

Social Impact: Tech can transform how we live, work and interact.

Cultural values: Different societies may have diffent values. based on cultural beliefs and practices.

Ethical Considerations: Technology can raise ethical questions, such as implementation of AI.

TECHNOLOGICAL PESSIMISM: Technology pessimism is a belief that the technological advancements can lead to negative consequences.

1. Environmental Degradations: populations
2. Social Isolations: → Reduce face to face interactions
3. Economic Disruptions: Loss of jobs
4. Ethical and Moral Issues: Genetic modifications, AI etc.

The Promise of Technology:

1. Improved Quality of life → Medical technology, transplantation
2. Addressing global issues → climate change, energy shortages.
3. Economic Growth → high jobs
4. Innovation & challenges. → New Ideas.

Computer Technology Privacy:

→ Nowadays Computer Technologies have been part of our daily life so data Privacy become an issues for us

(1) Data collection & Surveillance (2) Privacy Protection
(3) Ethical considerations (4) Regulation & Compliances.