SNS COLLEGE OF TECHNOLOGY

Coimbatore-35.

An Autonomous Institution

COURSE NAME : 19GET201 PROFESSIONAL ETHICS AND HUMAN VALUES

IV YEAR/ VII SEMESTER

Unit – II

Topic - Engineering as Experimentation

ENGINEERING AS EXPERIMENTATION

- Engineering as experimentation is a fascinating concept that highlights the iterative and exploratory nature of engineering practices.

- This perspective emphasizes that engineering is not just about applying established principles to solve problems but also involves exploring new possibilities, testing hypotheses, and learning from experimentation.

ENGINEERING AS EXPERIMENTATION

Key aspects :

1. Iterative Design Process

- Engineering often involves iterative cycles where designs are tested, evaluated, and refined. Prototypes are built, experiments are conducted, and feedback is used to improve the design.

2. Hypothesis-Driven Development

- Engineers often start with a hypothesis about how a system or component should work and then conduct experiments to validate or invalidate that hypothesis.

ENGINEERING AS EXPERIMENTATION

Key aspects :

3. Exploring Uncertainty

- Experimentation in engineering helps manage and explore uncertainty. Engineers might not always have a clear answer from the beginning, so they use experimentation to uncover new insights and refine their understanding of complex systems.

4. Innovation and Creativity

- Experimentation encourages innovation and creativity. By testing unconventional ideas and approaches, engineers can discover novel solutions and push the boundaries of what's possible.

ENGINEERING AS EXPERIMENTATION

Key aspects :

5. Learning from Failure

- Failures and setbacks are an integral part of the experimentation process. Each failure provides valuable information that can lead to better designs and solutions. Embracing failure as a learning opportunity rather than a setback is key to continuous improvement and innovation.

6. Data-Driven Decision Making

- Experimentation often involves collecting and analyzing data to make informed decisions. Engineers use this data to understand performance metrics, identify problems, and validate their designs.

ENGINEERING AS EXPERIMENTATION

Key aspects :

7. Cross-Disciplinary Insights

- Experimentation often involves integrating knowledge from various disciplines. Engineers might use insights from physics, materials science, and computer science to solve complex problems.

8. Adaptive Strategies

- Incorporating feedback and adapting strategies based on experimental results is crucial. Engineers must be flexible and willing to pivot or modify their approach based on new information or unexpected outcomes.


Thank You!