SNS COLLEGE OF TECHNOLOGY

Coimbatore-35.

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

COURSE NAME : 19GET201 PROFESSIONAL ETHICS & HUMAN VALUES

IV YEAR/ VII SEMESTER

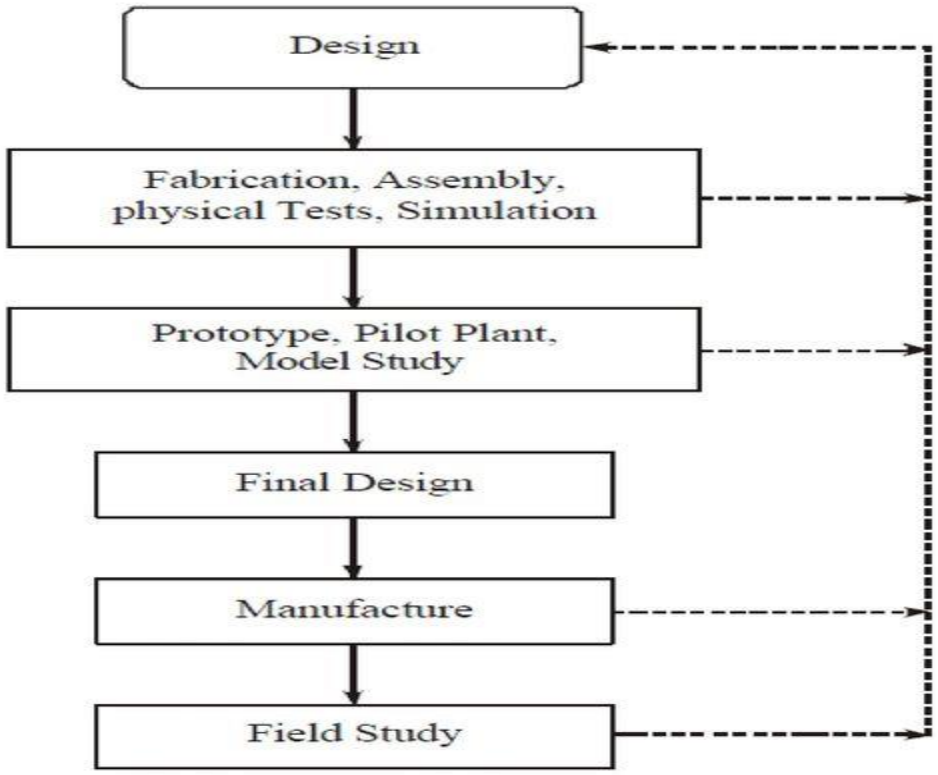
UNIT – II ENGINEERING AS SOCIAL EXPERIMENTATION

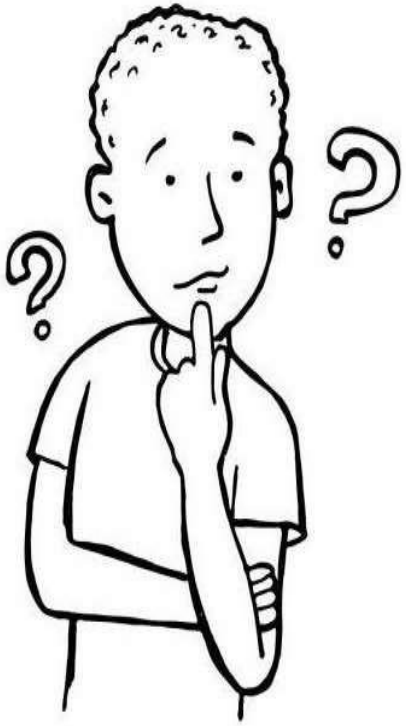
TOPIC: ENGINEERING AS EXPERIMENTATION

ENGINEERING AS EXPERIMENTATION

ENGINEERING AS EXPERIMENTATION

Before manufacturing a product or providing a project, we make several assumptions and trials, design and redesign and test several times till the product is observed to be functioning satisfactorily. We try different materials and experiments. From the test data obtained we make detailed design and retests.





ENGINEERING AS EXPERIMENTATION

Case Studies and Examples:
Bridge and Building Failures:

Historical examples of bridge and building collapses often highlight the importance of viewing engineering as experimentation. When such structures fail, it is crucial to investigate the causes and learn from these failures to prevent future occurrences.

Software Engineering: In software development, the iterative process of testing and refining code can be seen as a form of experimentation. Ethical considerations include ensuring user privacy, data security, and avoiding harm through software bugs.

ENGINEERING AS EXPERIMENTATION

Ethical Implications:

Responsibility for Outcomes: Engineers have an ethical responsibility to consider the potential impacts of their work on society, the environment, and individuals. Unlike scientific experiments conducted in controlled environments, engineering projects often have direct and immediate effects on people's lives.

Informed Consent: Similar to how human subjects in experiments must give informed consent, the public should be made aware of the potential risks associated with engineering projects, especially when those projects involve public infrastructure, health, or safety.

Safety and Risk Management: Engineers must prioritize safety and take steps to minimize risks. This includes conducting thorough testing, considering worst-case scenarios, and being transparent about potential hazards.

Learning from Failures: Just as scientists learn from failed experiments, engineers must learn from project failures. Ethical engineering involves analyzing failures to prevent future mistakes and improve designs.

ENGINEERING AS EXPERIMENTATION

Professional Obligations:

Code of Ethics: Most engineering professions have a code of ethics that reflects the idea of engineering as experimentation. These codes emphasize the importance of honesty, integrity, and accountability in the face of uncertainty.

Continuous Learning: Engineers are expected to continuously update their knowledge and skills, recognizing that the field is constantly evolving. This commitment to learning mirrors the experimental mindset of adapting to new challenges and technologies.


Thank
You