



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

IV YEAR/ VII SEMESTER

UNIT – II Engineering as Social Experimentation

Topic: Engineering as Social Experimentation

S.DHARANI

Assistant Professor

Department of Food Technology



Engineering as Social Experimentation



Experimentation

- ✓ To undertake a great work and especially a work of novel type means, carrying out an experiment.
- ✓ **Experimentation :**
A **test** under controlled conditions that is made to **demonstrate** a known truth, to examine the validity of a hypothesis, or to determine the efficacy of something previously **untried**. The **process of conducting such a test** is called as a **experimentation**



ENGINEERING AS EXPERIMENTATION

- Experimentation (Preliminary tests or Simulations) plays a important role in the design of a product or process.
- Experimentation refers the activity, process or practice of making experiments
- In all stages of converting a new engineering concept into a design like,
 - First rough cut design,
 - Usage of different types of materials and processes,
 - Detailed design,
 - Further stages of work design and
 - The finished product,
- Experiments and tests are conducted to evaluate the product. Modifications are made based on the outcome of these experiments.



SIMILARITIES TO STANDARD EXPERIMENTS



1. Like science exp, engg experiments are carried out in particular uncertainties
 - Any engineering project or plan is put into practice with partial ignorance because while designing a model there are several **uncertainties** occurred.

Reason: Engineers don't have all the needed facts available well in advance
2. The final outcomes of engineering projects are generally uncertain like that of experiments what we do
3. Similar to standard experiments, engg experiments requires thorough knowledge about the products at the pre-production and post-production stages



DISIMILARITIES TO STANDARD EXPERIMENTS

Experimental Control

- Members for two groups should be selected in a standard experimental control ie., Group A and Group B.
- The members of the group 'A' should be given the special experimental treatment.
- The group 'B' do not receive the same though they are in the same environment. This group is called the '*control group*'
- Though it is not possible in engineering but for the projects which are confirmed to laboratory experiments.
- Because, in engineering the experimental subjects are human beings who are out of the control of the experimenter
- So An engineer has to work only with the past data available with various groups who use the products.



DISIMILARITIES TO STANDARD EXPERIMENTS

Informed Consent

- When new medicines have been tested, it should be informed to the persons who undergo the test.
- They have moral and legal rights to know about the fact which is based on “**informed consent**” before take part in the experiment. Engineering must also recognize these rights.
- Informed consent has two main principles such as **knowledge** and **voluntariness**
- **Knowledge:** The persons who are put under the experiment has to be given all the needed information to make an appropriate decision
- **Voluntariness:** they must enter into the experiment without any force, fraud and deception



DISIMILARITIES TO STANDARD EXPERIMENTS

Knowledge Gain:

- Scientific experiments have been conducted to acquire new knowledge. Whereas engineering projects are conducted as experiments not for getting new knowledge
- Suppose the outcomes of the experiment is best, it tells us nothing new.
- Mean while, the unexpected outcomes put us search for new knowledge.