UNIT-I: Introduction To Statistics

Author : Statistics Department   **Date :** 2025

Definition of Statistics

Statistics is the science of collecting, organizing, analyzing, interpreting, and presenting data. It helps in making decisions based on data analysis.

Basic Objectives

The primary objectives of statistics are:
1. Description: Summarizing and organizing data.
2. Inference: Making predictions and generalizations from data.
3. Comparison: Identifying relationships between variables.
4. Estimation: Approximating unknown values.
5. Decision-making: Using statistical tools for making informed decisions.

Applications in Various Branches of Science

Statistics is widely used in various scientific fields:
- Biology: Analyzing genetic variations and medical trials.
- Economics: Understanding market trends and financial forecasting.
- Social Sciences: Studying population behaviors and trends.
- Physics: Data analysis in experimental physics.
- Engineering: Quality control and reliability analysis.

Collection of Data

Data can be categorized into:
1. **Internal Data:** Collected from within an organization.
2. **External Data:** Obtained from sources outside the organization.
3. **Primary Data:** Directly collected through surveys, experiments, and observations.
4. **Secondary Data:** Data gathered from existing sources like reports and journals.

Population and Sample

- **Population:** The entire set of individuals or items under study.
  - **Sample:** A subset of the population used to infer information about the whole.
  - **Representative Sample:** A sample that accurately reflects the characteristics of the population.