
Workshop

Upgraded NPAL's Chemist and Inspectors Knowledge and development of statistical design on sampling used for Field and Market Monitoring for fruits and vegetable

Sampling methods for food and food products and how to establish a sampling plan for improving quality through standardization and testing, Regression theory applied for the needs of related testing

Dec.01: Subject - Introduction to sampling and (the necessary) basic statistical knowledge

8:30-10:00 1st Morning session:

Opening of course

Introduction by lecturer

Questionnaire Pre (and Post) Course Knowledge (Questions to Upgraded NPAL.docx)

Lectures:

Deduction and Induction

Sampling—why and how?

Descriptive Statistics for Samples

Discrete Example

Continuous Example

10:00-10:30 Coffee break

10:30-12:00: 2nd Morning session:

Lectures:

Centre of a Distribution

Introduction to and comparison of Mean, Median, and Mode

Spread of a Distribution

Group work by participants:

Group Work on what Mean, Mode and Median would signify in the context of sampling of NPAL and other organizations.

Why and how are these concepts important and apply for the work of NPAL and other organizations

12:00-13:30 Lunch break;

13:30-15:00: 1st Afternoon session:

Lectures:

Probability

Introduction to Probability

Concept of Probability

Elementary Properties of Probability

Probability Distributions

15:00-15:30 Coffee break;

15:30-17:30 2st Afternoon session: Day's synopsis by lecturer and lecture:

Lectures:

Random sampling

Systematic sampling

Stratified samples
Sample sizes within strata
Quota sampling
Cluster and multistage sampling
Area sampling

Group work by participants:

Calculation of Probabilities Distributions characteristics of samples of NPAL and other organizations. Which sampling method applies to practices of the work of NPAL and other organizations and how and which method could be applied for the work of NPAL and other organizations - (if possible for the 4 different types of sampling points)

Dec.02: Subject - Advanced (and useful) statistical knowledge for sampling

8:30-10:00 1st Morning session:

Lectures:

Sampling and statistical testing
The null hypothesis
Parametric tests and non-parametric tests
Type I errors and type II errors
Standard Error
Example calculations of sample size
Introduction to statistical regression
The least square solution

10:00-10:30 Coffee break

10:30-12:00: 2nd Morning session:

Lectures:

To continue from 1st Morning session

Group work by participants:

Group Work on which statistical testing method applies to practices of the work of NPAL and other organizations and how and which method could or should applied for the work of NPAL and other organizations – Formulate of Test Hypothesis and distinguish between the two possible errors, when to induct from the sample on the population (if possible for the 4 different types of sampling points)
Applying exercises on Regression Theory, if this falls into the area of work of the group participants

12:00-13:30 Lunch break;

13:30-15:00: 1st Afternoon session:

Lectures:

The Normal Distribution
The Central Limit Theorem
The Distribution of expected Mean from a Normal Population
The Distribution of expected Mean from a Non-normal Population
Confidence Intervals and t-Test
Hypothesis Testing

Hypothesis Testing Using Confidence Intervals

More on Regression theory:

Simplifying Assumptions

The Nature of the Error Term

Confidence Intervals

Example of Interval estimates

Dangers of extrapolation

Statistical Risk

Risk of an Invalid Model

15:00-15:30 Coffee break;

15:30-17:30 2st Afternoon session: Lecture: to continue from morning lectures, Day's synopsis by lecturer:

Group work by participants:

Calculation of Probabilities t-tests, confidence intervals, sample size Distributions characteristics of samples of NPAL and other organizations. Which calculation and sampling method applies to practices of the work of NPAL and other organizations and how and which method . Exercises on Regression Analysis for Agriculturalists, Chemists, Analysts prepared but not mandatory (if possible for the 4 different types of sampling points)

Second brief assessment of NPAL and other staff members: What are our needs? What do we want to improve?

Dec.03: Final Group works, exercises an Assessment

8:30-10:00: 1st Morning session:

Lectures:

Course's synopsis by lecturer and lecture:

In case of Omissions further questions and clarifications

Group work by participants:

Group Work: Which method could and should be applied for the work of NPAL and other organizations- (if possible for the 4 different types of sampling points)

If required continuation of the application exercises on Sapling, Testing and Regression Theory, (if this falls into the area of work of the group participants).

10:00-10:30 Coffee break

10:30-12:30: 2nd Morning session:

- If necessary continuation of previous group works by participants:
- Group Evaluation of Workshop and
- Presentation of Course Results by groups
- Opinion based Evaluation questionnaire by participants and
- Questionnaire (Pre and) Post Course Knowledge (Questions to Upgraded NPAL.docx)

- Closing of course