DEPARTMENT OF AGRICULTURAL STATISTICS
PALLI SIKSHA BHAVANA
VISVA-BHARATI, SRINIKETAN

Courses for B.Sc. (Hons.) Agriculture
CBCS

Course Code	Course Title	Credit Hours
STAT 311	Statistics	2+1
STAT 312	Statistical Technique	2+1
STAT 321	Design in Agricultural Experiment	2+1

STAT 311   Statistics   3(2+1)

Objective

This course is meant for students who do not have any background knowledge of Statistics. Students would be exposed to various concepts of descriptive statistical methods and statistical inferential procedures what would help them in understanding the importance of statistics in drawing valid conclusions in every walk of their life. It would also help them in understanding the concepts involved in data presentation, their analysis and interpretation. The students would also get to know about how to describe and present data, various descriptive measures, probability distributions, procedures of parameter estimation, test of significance, concepts of correlation and regression, concept of drawing a good sample and designing field experiments.

Syllabus:

Theory

Introduction to Statistics and its Applications in Agriculture, Graphical Representation of Data, Measures of Central Tendency & Dispersion, Definition of Probability, Addition and Multiplication Theorem (without proof). Simple Problems Based on Probability. Binomial & Poisson Distributions, Definition of Correlation, Scatter Diagram. Karl Pearson's Coefficient of Correlation. Linear Regression Equations. Introduction to Test of Significance, One sample & two sample test t for Means, Chi-Square Test of Independence of Attributes in 2×2 Contingency Table. Introduction to Analysis of Variance, Analysis of One Way Classification. Introduction to Sampling Methods, Sampling versus Complete Enumeration, Simple Random Sampling with and without replacement, Use of Random Number Tables for selection of Simple Random Sample.

Practical

Graphical Representation of Data. Measures of Central Tendency (Ungrouped data) with Calculation of Quartiles, Deciles & Percentiles. Measures of Central Tendency (Grouped data) with Calculation of Quartiles, Deciles & Percentiles. Measures of Dispersion (Ungrouped Data). Measures of Dispersion (Grouped Data). Moments, Measures of Skewness & Kurtosis (Ungrouped Data). Moments, Measures of Skewness & Kurtosis (Grouped Data). Correlation & Regression Analysis. Application of One Sample t-test. Application of Two Sample Fisher's t-test. Chi-Square test of Goodness of Fit. Chi-Square test of Independence of Attributes for 2×2 contingency table. Analysis of Variance One Way Classification. Analysis of Variance Two Way Classification. Selection of random sample using Simple Random Sampling.

Learning Outcome:

It is expected that the students will be equipped with basic statistical tools used for analysing data sets and will be able to draw valid conclusion supported by statistical mechanism.

STAT 312   **Statistical Technique**   **3(2+1)**

Objective

This course is meant for students who have some knowledge of Statistics. It would help them in understanding the concepts involved in data presentation, their analysis and interpretation. The students would also get to know about how to describe and present data, various probability distributions, concept of drawing a good sample from the population.

Theory

Random Variable, Probability mass function. Probability density function. Mathematical Expectation, Moment generating function. Cumulant generating function. Probability Distributing: Negative Binomial, geometric, Uniform, Normal, Exponential, Gamma and Beta; Sampling Distributions: Chi-square, t and F test.

Concept of sampling; Sampling versus complete enumeration, Sample random sampling: SRSWAR and SRSWOR; Estimation of population proportion; Inverse sampling; Stratified Random Sampling; Concept of Systematic Sampling; Cluster Sampling; Sampling with varying probabilities.

Practical

Fitting of Binomial, Poisson, Normal distributions; Selection of a random sample, estimation using simple random sampling, drawing a PPS with replacement sample, Exercises on inverse sampling; Stratified Sampling; Cluster Sampling and Systematic Sampling.

Learning Outcome:

It is expected that the students will be equipped with basic statistical tools used for analysing data sets and will be able to draw valid conclusion supported by statistical mechanism.

STAT 321   **Design in Agricultural Experiment**   **3(2+1)**

Objective

This course is designed to give a comprehensive knowledge on how to design a study or experiment so that the results of the experiments are free from errors or biases, and then how to draw a valid conclusion using the results so obtained. In this context, laying out of different agricultural field experiments will also be covered. Designing an experiment is an integrated component of research in almost all sciences

Theory

Basic principles of design of experiments; Uniformity trials; Basic of design; Basic concepts of factorial experiments: Simple factorial with concept of confounding; Split plot and Strip plot designs, Analysis of covariance (CRD & RCBD); Missing plot techniques.

Practical

Analysis of data obtained from CRD, RBD, LSD; Analysis of factorial experiments (2^3 and 2^4 experiments). Analysis of Split plot and Strip plot experiment in RBD; Analysis with missing plot data in RBD and LSD; Analysis of covariance (RBD)

Learning Outcome

The students would be exposed to various concepts of designing an experiments so as to enable them understand the science involved in planning, designing their research experiments and how to make analysis of different experimental data.