ST. JOSEPH’S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM

III SEMESTER **AGRICULTURE AND RURAL DEVELOPMENT** Time:3hrs/week

SMCA 201 (2) **STATISTICAL METHOD** Marks:60

w.e.f AJ 2022-2023 **SYLLABUS**

**Objectives**

* To Prepare frequency distribution for ungrouped data
* To Prepare various graphs and charts
* To Compute of A.M, Median and Mode for grouped and un-grouped data
* To study about Problems on calculating skewness and kurtosis - S.D and CV% for grouped data

**Course Outcomes**

At the end of the course, students will be able to

**CO1:** Explain the importance and limitations of statistics in agriculture.

**CO2:** Interpret agricultural data using central tendency and dispersion measures.

**CO3:** Explain the importance of probability and testing of hypothesis measures in agricultural field data.

**CO4:** Apply the correlation and regression methods to interpret agricultural data.

**CO5:** Design the layouts and apply ANOVA methods to agricultural data.

**CO6:** Differentiate sampling and complete enumeration surveys and explain different sampling methods.

**Theory**

**UNIT –1 (3Hours)**

1. Introduction and various definitions of Statistics - Singular and plural reference of Statistics - A comprehensive definition of Statistics - Importance of Statistics in agriculture - limitations of statistics.

2. Frequency Distribution- Exclusive and inclusive methods - Discrete and continuous variables - Graphical representation of data

3. Central tendency-Definition - Measures of Central tendency - List of all the different measures and study of Arithmetic Mean – Median - Mode in detail (including merits and demerits) for ungrouped and grouped data.

4. Measures of Dispersion – Meaning of measures of Dispersion - Standard Deviation for ungrouped and grouped data- Coefficient of Variation (C.V) - Standard Error (S.E.) and difference between S.D. and S.E.

**UNIT - II (3 Hours)**

1. Definition of Probability – Addition - Multiplication theorems - Binomial and Poisson distributions

2. Normal Curve and its properties - Identification of normality through data i.e.., criterion. etc., expression for frequency function of Normal distribution

3. Testing of Hypothesis – Concept - Null hypothesis - Type I and Type II Errors Level of Significance - Critical region - General setup of testing - Large Sample Test with known and unknown

**UNIT –III (3 Hours)**

1. Small Sample test (t-test for one and two samples and Paired t- test) and F-test

2. Chi-Square test for 2x 2 and m x n contingency Table - Yate’s correction for Continuity

3. Correlation – Scatter diagram - Positive and negative correlation and its testing

**UNIT –IV (3 Hours)**

1. Regression – Fitting of linear regression equation of Y on X and X on Y and the inter relation-ship with “r” and testing of regression coefficients

2. Analysis of Variance (ANOVA) - Definition and assumptions - ANOVA with One-way classification (CRD) layout and analysis with equal and unequal repetitions, Advantages and disadvantages

3. ANOVA with Two-way Classification (RBD) - Layout and analysis, Advantages and disadvantages

**UNIT - V(3 Hours)**

1. ANOVA with three-way classification (LSD) – Layout and Analysis - Advantages and disadvantages.

2. Introduction to Sampling - Sampling Vs Census - Purposive and Random Sampling

3. Simple Random Sampling - Method of selection - Estimates of population mean and total and the estimates of their variances and confidence limits.

**References text books**

1. Nageswara Rao, G 2007. Statistics for Agricultural Sciences. B S Publications, Hyderabad

2. Rangaswamy, R 1995. A Text Book of Agricultural Statistics. New Age International (P) Limited, Hyderabad.

3. Chandel SRS, Hand Book of Agricultural Statistics. Achal Prakashan Mandir publications, New Delhi.

4. Agrawal, B.L. Programmed Statistics. 2nd Edition, New Age International Publishers

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