

RAYALASEEMA UNIVERSITY: KURNOOL
CBCS SYLLABUS (Semester wise)
2022-2025

B.A/B.Sc II YEAR: STATISTICS SYLLABUS
(With Mathematics Combination)
Semester – III

Paper – III Statistical Inference

Unit - I

Exact sampling Distributions: Population, Sample, Parameter, statistic, Sampling distribution, Standard error. Student's t- distribution, F – Distribution, χ^2 -Distribution: Definitions, properties and their applications.

Unit - II

Theory of estimation: Estimation of a parameter, criteria of a good estimator – unbiasedness, consistency, efficiency, & sufficiency and. Estimation of parameters by the method of moments and maximum likelihood (M.L), properties of MLE's. Binomial, Poisson & Normal Population parameters estimate by MLE method. Confidence Intervals for mean and variance in Normal Distribution

Unit - III

Testing of Hypothesis: Concepts of statistical hypotheses, null and alternative hypothesis, critical region, two types of errors, level of significance and power of a test. One and two tailed tests. Neymann- Pearson's lemma. Examples in case of Binomial, Poisson, Exponential and Normal distributions.

Unit-IV

Large sample Tests: large sample test for single mean and difference of two means, confidence intervals for mean(s). Large sample test for single proportion, difference of proportions. standard deviation(s) and correlation coefficient(s).

Small Sample tests: t-test for single mean, difference of means and paired t- test. Chi-square test for goodness of fit and independence of attributes. F-test for equality of variances.

Unit-V

Non-parametric tests: Non parametric test meaning, types, their advantages and disadvantages, comparison with parametric tests. Measurement scale- nominal, ordinal, interval and ratio. Two independent sample tests: Median test, Wilcoxon –Mann-Whitney U test, Wald- Wolfowitz's runs test. Sign test for large sample case

Practicals – Semester – III

1. Large sample test for single mean
2. Large sample test for difference of means
3. Large sample test for single proportion
4. Large sample test for difference of proportions
5. Large sample test for difference of standard deviations
6. Large sample test for correlation coefficient
7. Large sample test for two sample correlation coefficients.
8. Small sample test for single mean
9. Small sample test for difference of means
10. Small sample test for correlation coefficient
11. Paired t-test (paired samples)
12. Small sample test for single variance (chi-square test)
13. Small sample test for differences of variances (F-test)
14. Chi- square test for goodness of fit and independence of attributes
15. Nonparametric tests for single sample (run test, sign test and Wilcoxon signed rank test)
16. Nonparametric tests for related samples (sign test and Wilcoxon signed rank test)
17. Nonparametric tests for two independent samples (Median test, Wilcoxon-Mann- Whitney – U test, Wald – Wolfowitz's runs test)

List of reference books:

1. BA/BSc II year statistics - statistical methods and inference - Telugu Academy by A.Mohanrao, N.Srinivasa Rao, Dr R.Sudhakar Reddy, Dr T.C. RavichandraKumar.
2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC.PHI.
3. Fundamentals of Mathematics statistics : VK Kapoor and SCGuptha.
4. Outlines of statistics, Vol II : Goon Guptha, M.K.Guptha, Das GupthaB.
5. Introduction to Mathematical Statistics :HoelP.G.
6. Hogg Tanis Rao: Probability and Statistical Inference.
7thedition.Pearson.