A.P. State Council of Higher Education

Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Three-Year B.A

Domain Subject: **ECONOMICS**

III Year B.A.-Semester-V

Max Marks: 100

Course 6D: **Inferential Statistics and Software Packages**
(Skill Enhancement Course (Elective), 4 Credits)

1. Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Demonstrate the knowledge related to the important concepts and techniques of inferential statistics
2. Calculate correlation, regression coefficients and interpret the results.
3. Use Excel sheets and SPSS package to analyse the data and derive the results.

II. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Concept and Theories of Probability

Concept of Probability - Definitions of Probability: Classical or Mathematical and Empirical or Statistical – Axiomatic Approach to Probability – Theorems of Probability: Addition and Multiplication (without proofs).

Unit 2: Theoretical Probability Distributions

Binomial Distribution: Constants (without proof) and Properties – Poison Distribution: Constants (without proof) and Properties – Normal Distribution: Constants (without proof) and Properties – Standard Normal Distribution and Standard Normal Curve – Economic and Practical Applications of Binomial, Poison and Normal Distributions.

Unit 3: Test of Significance - Large and Small Sample Tests

Steps involved in Testing of Hypotheses – Large Sample or Z-Test – Testing the difference between Means and Proportions – Small Sample Tests – Difference between Large and Small Sample Tests – Applications of Student's t-test, χ^2 test, F-test – One way and Two way ANOVA.

Unit 4: Linear and Non-linear Multiple Regression Models

Three Variable Linear Multiple Regression Model – Notation – Assumptions – Estimation of Partial Regression Coefficients – Interpretation of Regression coefficients - Testing the coefficients: t-test, p-value – Coefficient of Determination: R^2 and adjusted R^2 – Estimation of Non-linear Multiple Regression: Cobb-Douglas Production Function and Interpretation of Elasticity Coefficients.

Unit 5: Excel and Software Packages for Data Analysis

Worksheet – Entering data in Worksheets – Creating Graphs and Charts - Mathematical and Statistical Functions - Data Analysis Pack in Excel - Descriptive Statistics, Testing of Hypotheses, ANOVA, Correlation and Regression, Random Number Generation - Data Handling Using SPSS - Opening Excel files in SPSS - Analysis Tools - Descriptive Statistics - Selection of Variables in Multiple Linear Regression – Estimation of Regression Coefficients using SPSS and their interpretation.

III. References:

1. S. C. Gupta: **Fundamentals of Statistics,** Himalaya Publishing House, Bombay, 1982.
2. S. P. Gupta: ***Statistical Methods,*** S. Chand & Company, New Delhi, 2000.
3. K. V. S. Sharma : ***Statistics Made Simple: Do it yourself on PC, (Second edn.)*** Prentice Hall of India, New Delhi, 2010.
4. తెలుగు అకాడమీ ప్రచురణ "పరిమాణాత్మక పద్ధతులు"
5. B. N. Gupta: ***Statistics Theory and Practice,*** Sahitya Bhavan, Agra, 1992.
6. Goon A.M., M. K. Gupta and B. Dasgupta: ***Fundamentals of Statistics,*** Vol.1, The World Press, Ltd, Calcutta, 1975.
7. Nagar, A.L. and R. K. Das: ***Basic Statistics,*** Oxford University Press, New Delhi, 1996.
8. ***D N Elhance,*** Veena Elhance & B M Aggarwal ***Foundation of Statistics,*** Kitab Mahal, New Delhi, 2018.
9. Relevant web resources suggested by the teacher and college librarian

IV. Co-Curricular Activities:

a) Mandatory (*Training of students in the related skills by the teacher for a total 10 Hours)*
1) **For Teacher**: Training of students by teacher in the classroom and in the field for a total of not less than10 hours on skills and hands on experience like calculation and interpretation normal curve, Z-values, t-test, χ^2 test, F-test, ANOVA, regression results, t, p and R^2 values using Excel and/or SPSS. The expertise of practicing persons can be utilized for this purposes.

2) **For Student:** Students shall take up a real time data of any economic organisation or firm and calculate the important statistical tests for the data and write the results with interpretations in the given format, not exceeding 10 pages, and submit to the teacher, as Fieldwork Report

3) **Suggested Fieldwork Format (***Report shall not exceed 10 pages*):
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.
4) Max Marks for Fieldwork Report: 05
5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1. Invited Lectures with academic experts, practicing persons.
2. Hands on experience by field experts.
3. Assignments
4. Debates on related topics
5. Seminars, Group discussions, Quiz, etc.

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