

CERTIFICATE COURSE IN STATISTICAL ANALYSIS IN RESEARCH USING SPSS

SYLLABUS

DEPARTMENT: DEPARTMENT OF COMMERCE

NAME OF COURSE: CERTIFICATE COURSE IN STATISTICAL ANALYSIS IN RESEARCH USING SPSS

COURSE CODE: CPCC13

TOTAL HOURS: 80

UNIT-I DEVELOPING THE FAMILIARITY WITH SPSS PROCESSOR (5 HOURS)

Entering data in SPSS editor. Solving the compatibility issues with different types of file. Inserting and defining variables and cases. Managing fonts and labels. Data screening and cleaning. Missing Value Analysis. Sorting, Transposing, Restructuring, Splitting, and Merging. Compute & Recode functions. Visual Binning & Optimal Binning. Research with SPSS (random number generation).

UNIT- II WORKING WITH DESCRIPTIVE STATISTICS (5 HOURS)

Frequency tables, Using frequency tables for analyzing qualitative data, Explore, Graphical representation of statistical data: histogram (simple vs. clustered), boxplot, line charts, scatterplot (simple, grouped, matrix, drop-line), P-P plots, Q-Q plots, Addressing conditionalities and errors, computing standard scores using SPSS, reporting the descriptive output in APA format.

UNIT -III HYPOTHESIS TESTING (10 HOURS)

Sample & Population, concept of confidence interval, Testing normality assumption in SPSS, Testing for Skewness and Kurtosis, Kolmogorov–Smirnov test, Test for outliers: Mahalanobis Test, Dealing with the non-normal data, testing for homoscedasticity (Levene's test) and multicollinearity.

UNIT -IV TESTING THE DIFFERENCE BETWEEN GROUP MEANS (10 HOURS)

t – test (one sample, independent- sample, paired sample), ANOVA-GLM 1 (one way), Post-hoc analysis, Reporting the output in APA format.

CERTIFICATE COURSE IN STATISTICAL ANALYSIS IN RESEARCH USING SPSS

SYLLABUS

DEPARTMENT: DEPARTMENT OF COMMERCE

UNIT -V CORRELATIONAL ANALYSIS (5 HOURS)

Data entry for correlational analysis, Choice of a suitable correlational coefficient: non-parametric correlation (Kendall's tau), Parametric correlation (Pearson's, Spearman's), Partial and Distance Correlation.

UNIT -VI REGRESSION – LINEAR & MULTIPLE (15 HOURS)

The method of Least Squares, Linear modeling, assessing the goodness of fit, simple regression, Multiple regression (sum of squares, R and R², hierarchical, step-wise), Choosing a method based on your research objectives, checking the accuracy of regression model.

UNIT-VII LOGISTICS REGRESSION (10 HOURS)

Choosing method (Enter, forward, backward) & covariates, choosing contrast and reference (indicator, Helmert and others), predicted values: probabilities & group membership, Influence statistics: Cook, Leverage values, DfBetas, Residuals (unstandardized, logit, studentized, standardized, deviance), Statics and plot: classification, Hosmer-Lemeshow goodness-of-fit, performing bootstrap, Choosing the right block, interpreting -2loglikelihood, Omnibus test, interpreting contingency and classification table, interpreting Wald statistics and odd ratios. Reporting the output in APA format

UNIT- VIII NON-PARAMETRIC TESTS (10 HOURS)

When to use, Assumptions, Comparing two independent conditions (Wilcoxon rank-sum test, Mann-Whitney test), Several independent groups (Kruskal- Wallis test), Comparing two related conditions (Wilcoxon signed-rank test), Several related groups (Friedman's anova), Post-hoc analysis in non-parametric analysis. Categorical testing: Pearson's Chi-square test, Fisher's exact test, Likelihood ratio, Yates' correction, Loglinear Analysis. Reporting the output in APA format

UNIT- IX FACTOR ANALYSIS (10 HOURS)

Theoretical foundations of factor analysis, Exploratory and Confirmatory factor analysis, testing data sufficiency for EFA & CFA, Principal component Analysis, Factor rotation, factor extraction, using factor

CERTIFICATE COURSE IN STATISTICAL ANALYSIS IN RESEARCH USING SPSS

SYLLABUS

DEPARTMENT: DEPARTMENT OF COMMERCE

analysis for test construction, Interpreting the SPSS output: KMO & Bartlett's test, initial solutions, correlation matrix, anti-image, explaining the total variance, communalities, eigen-values, scree plot, rotated component matrix, component transformation matrix, factor naming.

UNIT- X LAB WORK & PROJECT

All the units will include discussion on theoretical concepts followed by practical SPSS demonstration on real/simulated data. Learners are welcome to bring and discuss their actual problems related to quantitative analysis. Our every learner receives personal attentions and we endeavour to equip every learner to develop a sense of professional competency in quantitative data analysis using SPSS.