

Syllabus for Course on SPSS
For Jyoti Nivas College (JNC), Bangalore- August-2024

Topics	Resources/ Activities	Number of Hours
1. Introduction to Statistics -Overview of Statistics, -Distinction between Statistic and Statistics, -Population parameters and sample statistics, -Types of statistics (description, inferences, prediction), -Introduction to quantitative research	Classroom lecture, discussions, activities	4
2. Statistics and Research -Overview of scientific research and scientific methods, - Variables and operationalization, -Research cycle, -Types of Data (nominal, ordinal, interval, ratio), -Sampling techniques, - Significance tests and hypothesis testing,	Classroom lecture, discussions, activities	4
3. Introduction to SPSS and working with data -Understanding the SPSS software, -Creating a data file using a data processor, -Data coding/computing, cleaning and tabulation, -Making data files ready for data analysis	Classroom demos, group activities	4
4. Descriptive Statistics -Representing frequencies/proportions, -Measures of central tendency (mean, median, mode), -Measures of dispersion (standard deviation, variance, range), -Normality testing (skewness, kurtosis, normality plots), -Standard scores/z scores, -Graphical representation of data	Classroom demos, group activities	4
5. Inferential Statistics - Significance testing and confidence intervals (p), -Assumptions for inferential statistics, -Significance values and degrees of freedom (df), -Power and effect sizes of inferential statistics (Type I and II errors), -Assumptions for parametric and non parametric tests.	Classroom demos, group activities	4
6. Testing for differences -Parametric tests (independent samples, paired & one sample t -tests), and non parametric tests (Wilcoxon's T, Mann-Whitney U, binomial sign tests) of difference between groups/conditions	Classroom demos, group activities	4
7. Testing for relationships/associations -Correlation analysis (Pearson's product moment, Spearman's rank, tetrachoric correlations), -Associations between categorical variables (chi square tests, 2×2 tests, crosstabs)	Classroom demos, group activities	4
8. Tests for more than 2 variables (Multi level) -One way ANOVA and F ratio statistics, Two-way and other multivariate ANOVAs, -A priori and post hoc tests, -ANCOVA and MANOVA, -Non parametric versions of multi-level tests (Kruskal Wallis, Friedman's tests)	Classroom demos, group activities	4
9. Testing for causation/prediction -Regression analysis principles and assumptions, -Linear, logistic, multiple, hierarchal and multinomial regressions, -The regression coefficient (B) and Odds Ratio (OD), -Issues in regression- multicollinearity, homoscedasticity, etc.	Classroom demos, group activities	4
10. Tool construction and psychometrics -Development of research tools in social sciences, -Types of rating scales, -Item analysis (difficulty & discrimination), - Reliability and validity analysis, -Norms and interpretation of scores	Classroom demos, group activities	4

Reference Materials

1. Coolican, H. (2014). *Research Methods and Statistics in Psychology* (6th edition). Psychology Press, London. <https://doi.org/10.4324/9780203769836>
2. Field, A. (2019). *Discovering Statistics using IBM SPSS Statistics* (4th edition). SAGE Publications. https://study.sagepub.in/field_dsiss4e
3. Laerd Statistics- SPSS Statistics Tutorials and Statistical Guides (Web resource) at <https://statistics.laerd.com/>
4. Statistics Solutions (Web resource) at <https://www.statisticssolutions.com/>