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PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Autonomous
Siddhartha Nagar, Vijayawada–520010
Re-accredited at 'A+' by the NAAC

Course Code				**23ANMAP234**			
Title of the Course				**Statistical Data Analysis using JASP**			
Offered to:				**BBA Honours (Analytics)**			
L	**0**	**T**	**0**	**P**	**2**	**C**	**1**
Year of Introduction:		**2024-25**		**Semester:**			**3**
Course Category:		**MAJOR**		**Course Relates to:**		**Skill Development**	
Year of Revision:				**Percentage:**			
Type of the Course:				**Skill development**			
Crosscutting Issues of the Course:				**Human Values and Professional Ethics**			
Pre-requisites, if any							

Course Description:

JASP is a statistical software program designed to provide a comprehensive set of tools for data analysisand statistical testing. It is named in honor of the statistician Harold Jeffreys, known for his contributionsto Bayesian statistics. Key Features are **User-Friendly Interface,** Statistical Analysis, Visualizations, Reproducibility, Open Source

Course Aims and Objectives:

S.NO	COURSE OBJECTIVES
1	Understand the basic features and functionalities of JASP
2	Understand data cleaning and preparation techniques using JASP.
3	Perform various statistical analyses including descriptive statistics, t-tests, ANOVA, and regression using JASP.
4	Create and interpret different types of visualizations such as histograms, scatter plots, and bar charts.
5	Understand how to draw conclusions and make data-driven decisions based on the analysis results.

Course Outcomes

At the end of the course, the student will be able to…

CO NO	COURSE OUTCOME	BTL	PO	PSO
CO1	Familiarize with the user interface and navigation within the software.	K2	2,3	1
CO2	Learn how to import, organize, and manage datasets in JASP.	K2	2,3,6	1
CO3	Explore and apply statistical methods and their interpretation.	K3	2,3,6	1
CO4	Utilize visualization tools in JASP to enhance data presentation and analysis.	K4	3,4	2
CO5	Learn to interpret the output provided by JASP for different statistical tests.	K4	3,4,5	2

For BTL: K1: Remember; K2: Understand; K3: Apply; K4: Analyze; K5: Evaluate; K6: Create

CO-PO MATRIX									
CO NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1		3	3					3	
CO2		3	3			2			3
CO3		3	3			2			3
CO4			3	4					3
CO5			2	3	2				2

Use the codes 3,2,1 for High, Moderate and Low correlation Between CO-PO-PSO respectively

Course Description: This lab list covers the key areas of a Statistical analysis providing hands-on practice with using JASP

Course Structure

Unit1: Introduction to Statistics:

Installation, Introduction to statistics, importing datasets (CSV, Excel, etc.) into JASP, understanding variables and their types, Creating descriptive statistics in JASP (mean, median, mode, standard deviation, etc.)

Lab 1: Installing JASP and exploring the interface

Lab 2: Hands-on practice with data entry and summary statistics

Dataset: Iris Dataset

Task: This is suitable for practicing basic descriptive statistics, visualization, and classification techniques.

Unit 2 Graphical Representation of Data & Hypothesis Testing:

Histograms, Bar charts, Pie charts, and Box plots, Scatterplots for continuous data, Introduction to hypothesis testing: null vs. alternative hypothesis Types of errors: Type I and Type II, p-values and significance levels

Lab3: Creating and interpreting graphs in JASP

Lab4: Performing one-sample, two sample t-test, p-test using JASP

Dataset: Sales Data .csv Tasks: Calculate the following

- **Month:** The month in which sales data was recorded.
- **Product A Sales:** The number of units sold for Product A.
- **Product B Sales:** The number of units sold for Product B.
- **Product C Sales:** The number of units sold for Product C.
- **Total Revenue:** The total revenue generated from all products in that month.
- Perform one-sample, two sample t-test, p-test

Unit 3: Introduction to one-way ANOVA:

Assumptions of ANOVA, Post-hoc testing formultiple comparisons

Lab5: Performing ANOVA in JASP and interpreting results

Data Set: Student Performance.csv

Tasks: Perform One way and Two-way Anova

Unit 4 Correlation and Regression Analysis:

Introduction to correlation: Pearson andSpearman, Simple linear regression, Interpretation of correlation coefficients and regression equations

Lab6: Conducting Correlation in JASP

Lab 7: Conducting Regression analyses in JASP

Data Set: Employee .csv

Tasks: Perform correlation and regression

Unit 5: Chi-square Tests:

Introduction to chi-square test of independence, Contingency tables and categorical data analysis, **Non-Parametric Tests:** When to use non-parametric tests, Mann-Whitney U test, Wilcoxon signed-rank test, Kruskal-Walli's test

Lab8: Running chi-square tests in JASP

Lab 9: Conducting non-parametric tests in JASP

Lab10: Creating reports and exporting results from

JASPData set: mtcars.csv

Task: Perform the following

1. Mann-Whitney U test

2. Wilcoxon signed-rank test
3. Kruskal-Walli's test
4. Report writing

Lab Manual

1. "Introduction to Statistics with JASP: A Step-by-Step Guide" by Jeffrey J. R. Williams and Richard A.Johnson]

References:

1. Field, A. (2023). *Discovering Statistics Using JASP* (1st ed.). Sage Publications. Verhagen, M. T., & Jolivet, J. (2022). *Statistics for*