COURSE TITLE	**DESCRIPTIVE AND DIAGNOSTIC ANALYTICS USING SPSS**
COURSE CODE	**04BM0102**
COURSE CREDITS	**3**

Course Outcomes: After completion of this course, student will be able to:

1. Differentiate the concepts of descriptive and diagnostic analytics and effectively manage datasets using SPSS for exploratory data analysis.
2. Apply descriptive statistical methods such as central tendency, dispersion, and distribution shape measures using SPSS and interpret the results accurately.
3. Perform correlation and regression analyses—including Pearson, Spearman, simple, and multiple regression (Enter and Stepwise methods)—using SPSS and assess statistical relationships among variables.
4. Conduct and interpret parametric hypothesis tests including t-tests and ANOVA in SPSS to evaluate group differences based on research hypotheses.
5. Utilize non-parametric statistical techniques such as Mann-Whitney U, Wilcoxon, Kruskal-Wallis, Friedman, and Chi-square tests in SPSS for analyzing data that violate parametric assumptions.

Pre-requisite of course: Basic knowledge of statistics (mean, median, standard deviation, correlation). Familiarity with data types and basic computer operations. Prior exposure to spreadsheet tools (e.g., MS Excel) is beneficial.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	0	30	20	50	0

Contents : Unit	Topics	Contact Hours
1	**Introduction to Descriptive and Diagnostic Analytics:** Definition and scope of descriptive and diagnostic analytics, Role of analytics in decision-making, Overview of SPSS: Interface, data entry, and file handling, Types of data and levels of measurement, Data cleaning and preparation in SPSS, Exploratory Data Analysis (EDA): Frequency distributions, charts, and tables	9
2	**Descriptive Statistics in SPSS:** Measures of central tendency: Mean, Median, Mode, Measures of dispersion: Standard Deviation, Variance, Range, Shape of distribution: Skewness and Kurtosis, Visualization: Histograms, Boxplots, and Normal Q-Q Plots, Interpretation of descriptive statistics output in SPSS	9

DR. MEETA JOSHI
Digitally signed by (Name of HOD)

DR. SANJEET SINGH
Digitally signed by (Name of Dean/ Principal)

Contents : Unit	Topics	Contact Hours
3	**Correlation and Regression Analysis** Correlation Analysis: Karl Pearson's correlation, Spearman's rank correlation, part and partial correlations, Interpretation of correlation coefficients in SPSS Regression Analysis: Simple linear regression, Multiple linear regression, Enter and Stepwise methods in SPSS, Assumption testing and interpretation of regression outputs	9
4	**Hypothesis Testing – Parametric Tests:** Concept of hypothesis testing and p-values, One-sample t-test, Independent samples t-test, Paired samples t-test, Assumptions, execution, and interpretation in SPSS, One-way and Two-way ANOVA, Post hoc analysis and effect size estimation	9
5	**Hypothesis Testing – Non-Parametric Tests** One-sample Kolmogorov-Smirnov test, Mann-Whitney U test Wilcoxon Signed-Rank test, Kruskal-Wallis H test, Friedman test, Chi-square test for independence, Performing non-parametric tests and interpreting SPSS outputs	9
Total Hours		**45**

Textbook :

1 Market research and applied science using SPSS, Naresh Malhotra , Pearson Education India, 2022

2 Data analysis by resampling: concepts and applications, Clifford E.Lunneborg , Thomson learning, 2000

References:

1 Data analysis using SPSS for windows, Data analysis using SPSS for windows, Jeremy J. Foster , Sage publications, -

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
0.00	20.00	20.00	20.00	20.00	20.00

Instructional Method:

1 Concept explanation through lectures, hands-on SPSS lab sessions, data interpretation assignments, and real-data case studies.

DR. MEETA JOSHI
Digitally signed by (Name of HOD)

DR. SANJEET SINGH
Digitally signed by (Name of Dean/ Principal)

Supplementary Resources:

1 https://libguides.library.kent.edu/SPSS
2 https://statistics.laerd.com/spss-tutorials.php
3 https://www.coursera.org/learn/spss

DR. MEETA JOSHI
Digitally signed by (Name of HOD)

DR. SANJEET SINGH
Digitally signed by (Name of Dean/ Principal)