SES's L.S. RAHEJA COLLEGE OF ARTS and COMMERCE (AUTONOMOUS)

BOARD OF STUDIES: Psychology
PROGRAMME: MA Psychology (with Counselling Specialization)
SEMESTER: I
NOMENCLATURE OF THE COURSE: APPLIED STATISTICAL METHODS
NEP Vertical: MAJOR
Credit: 4

(As Per Choice Based Credit System (under NEP 2020) with effect from the academic year 2025-26)

Programme:	**MA Psychology (with Counselling Specialization)**
Nomenclature of the Course	**Applied Statistical Methods**
Course Code	**PGMACOIMJ226**
Total Marks	**100**
Semester:	**I**
Academic year	**2026-27**

LEARNING OBJECTIVES: This paper aims to equip students with advanced knowledge of statistical concepts and techniques used in psychological research, including descriptive, inferential, and multivariate methods. It also aims to develop analytical and practical skills in applying statistical tools and software for data interpretation and research decision-making.

COURSE OUTCOMES:

1. Analyse fundamental statistical concepts, including probability, normal distribution, and statistical inference, to critically interpret psychological data. Evaluate the appropriateness of estimation techniques and hypothesis testing procedures in research contexts.
2. Analyse and apply measures of association and prediction, including correlation and regression models, to examine relationships among variables. Critically evaluate the assumptions, limitations, and applicability of these techniques in psychological research.
3. Analyze and evaluate univariate and multivariate inferential statistical techniques, including t-tests, ANOVA, MANOVA, and non-parametric tests, for hypothesis testing. Select and justify appropriate statistical methods for different research designs and data types.
4. Analyze and apply factor analytic techniques and statistical software packages to interpret complex data structures. Evaluate and integrate statistical outputs using tools such as R, JAMOVI, and qualitative software for comprehensive research analysis.

Unit	Course Content	Andragogy	No of Lectures
Module I	**1. Fundamental Statistical Concepts** 1.1 Descriptive Statistics: Measures of Central Tendency and Variability 1.2 Definition, Models, and Theorems of Probability 1.3 Concept of Normal Distribution, Normality, and Standard Scores 1.4 Basis of statistical inference; estimation theory, statistical hypothesis testing, types of errors, power and effect size	Interactive lectures, PowerPoint presentations, Practical demonstrations, Data analysis exercises Hands-on training using statistical software	**15**
Module II	**2. Measures of Association and Prediction** 2.1 Correlation: Parametric and Non-Parametric Methods, Multicollinearity 2.2 Linear Regression (OLS), Multiple Regression	Interactive lectures, PowerPoint presentations, Practical demonstrations,	**15**

	2.3 Logistic Regression 2.4 Mediation Analysis	Data analysis exercises Hands-on training using statistical software	
Module III	**3. Inferential Statistics - Univariate & Multivariate** 3.1 t-test: One sample, Independent t-test, Dependent t-test 3.2 Analysis of Variance (ANOVA) 3.3 MANOVA and ANCOVA 3.4 Non-parametric tests: Chi-square tests, Comparing Locations of Independent and Dependent Samples	Interactive lectures, PowerPoint presentations, Practical demonstrations, Data analysis exercises Hands-on training using statistical software	**15**
Module IV	**4. Factor Analysis and Software Packages** 4.1 Factor analysis: Basic concepts, methods of extraction, and methods of rotation 4.2 Confirmatory Factor Analysis 4.3 Exploratory Factor Analysis 4.4 R, JAMOVI (Open source), Packages for qualitative analysis NVivo, Atlas, Software Package in Social Sciences (SPSS),	Interactive lectures, PowerPoint presentations, Practical demonstrations, Data analysis exercises Hands-on training using statistical software	**15**

SUGGESTED READINGS

1. Aron, A., Coups, E. J., Aron, E., & Cooley, E. (2023). Statistics for Psychology (7th Ed) Pearson. Gravetter, F. J. & Wallnau, L. B. (2012). Statistics for the Behavioral
2. Field, A., Miles, J., and Field, Z. (2012). Discovering Statistics Using R. NY: Sage.
3. Gupta S.P. (2022). Statistical Methods (48th Ed), Sultan Chand, New Delhi.
4. Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). Multivariate data analysis. (5thEd.). N.J.: Prentice-Hall Inc.
5. Howell, D. (2013) Statistical Methods for Psychology (8th Ed), Wadsworth.
6. Marcoulides, A. G. &Schumacker, E. R. (2001). New developments and techniques in structural equation modelling. Hillsdale, New Jersey: Lawrence Erlbaum.
7. Minium, E. W., King, B. M., & Bear, G. (2021). Statistical Reasoning in Behavioural Sciences (7th Ed). Singapore: John-Wiley
8. R Development Core Team. (2011). R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing: Vienna, Austria.
9. Sheskin, D. (2011). Handbook of Parametric and Nonparametric Statistical Procedures, (5th Ed). Chapman and Hall/CRC.
10. Tabachnick, B. G. &Fidell, L. S. (2001). Using multivariate statistics
11. Wilcox, R. R. (2017). Modern Statistics for the Social and Behavioral Sciences: A Practical Introduction (2nd ed). Chapman and Hall, New York

QUESTION PAPER PATTERN

(A) FOR CONTINUOUS EVALUATION

20 Marks Class Test	(MCQ/QUIZ) ---------- 20 MARKS

(A-1)

(A-1) RUBRICS FOR CONTINUOUS EVALUATION

20 Marks	ASSIGNMENT ---------- 10 MARKS
	VIVA-VOCE ---------- 10 MARKS

(B) QUESTION PAPER PATTERN FOR SEMESTER END EXAMINATION

60 Marks	Q1. Answer in brief (1/2)-------- 15 marks
	Q2. Answer in brief (1/2)-------- 15 marks
	Q3. Answer in brief (1/2)-------- 15 marks
	Q4. Answer in brief (1/2)-------- 15 marks