GENERIC ELECTIVE COURSE: Statistical Foundations for Psychological Research

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (ifany)
		Lecture	Tutorial	Practical/ Practice		
GE Statistical Foundations for Psychological Research	**4**	**3**	**1**	**0**	**Class XII Passed**	**Nil**

Learning Objectives

- To understand the importance of statistics in psychological research.
- To develop the ability to summarize and describe data sets using descriptive statistics.
- To understand and interpret the normal distribution curve in the context of psychological data analysis.
- To analyze relationships between variables using correlation techniques.
- To understand basics of hypothesis testing and determining statistical significance in psychological research.

Learning outcomes

- Calculate and interpret descriptive statistics such as measures of central tendency and variability.
- Understand and apply the normal probability curve and z-scores.
- Conduct correlation analysis and interpret results.
- Understand testing of hypotheses and the implications of statistical significance.
- Use statistical reasoning to evaluate psychological research and draw valid conclusions.

Syllabus

UNIT–I: Introduction **(12 Hours)**

Importance of statistics in psychological research; Descriptive and Inferential Statistics; Scales of Measurement; Measures of Central Tendency (Mode, Median, Mean): Properties and Computation using raw scores; Measures of Variability(Range, Variance, Standard Deviation): Properties and Computation using raw scores.

UNIT – II: Standard Scores & Normal Probability Curve (8 Hours)

StandardScores(zscoresandTscores):PropertiesandComputationusingraw scores;NormalProbabilityCurve:NatureandProperties; Skewness & Kurtosis: Meaning and Types

UNIT–III: Correlation (10 Hours)

Correlation: Direction and Degree; Correlation and Causation; Pearson's Coefficient of Correlation: Assumptions and Computation from raw scores; Cautions concerning Correlation Coefficients

UNIT–IV: HypothesisTesting (15 Hours)

Testing a Hypothesis about a Single Mean; Steps of Hypothesis Testing; Null hypothesis & Alternate hypothesis; Retention & Rejection of Null hypothesis; p - values and statistical significance; Errors in hypothesis testing (Type I & Type II Errors); t - test (independent & paired sample); Difference between Parametric and Non-Parametric Tests

Practical Component- Nil

Tutorial Component (15 Hours)

The following suggestive list of activities may be done manually or using excel tool pack or statistical software:

- Applying statistical methods to real-world psychological research
- Calculating descriptive statistics
- Drawing The Normal Probability Curve
- Problems Based On Standard Scores
- Calculating and Interpreting Pearson's Coefficient Correlation
- Performing Hypothesis Testing Using T-test
- Interpreting Data Based On P-values and statistical significance
- Reporting Results in APA Format

Essential/recommended readings

Aron,A., Aron,E.N. & Coups, E.J. (2013).*StatisticsforPsychology*(6thEd.).Delhi: Prentice Hall of India.

Howitt,DandCramer,D. (2011). *Introduction to Statisticsin Psychology*. London,UK: Pearsons Education Ltd.

King,B.M.&Minium,E.W,(2007).*StatisticalReasoningintheBehavioralSciences* (5thEd.).Noida:Wiley.

Mangal, S.K. (2012). *Statistics in Psychology and Education* (2nd Ed.). Delhi: Prentice Hall of India.

Suggestive readings

Bourne, V. (2017). *Starting Out in Methods and Statistics for Psychology: A Hands-on Guide to Doing Research.* Oxford University Press.

Garrett, H.E (2005). *Statistics in Psychology and Education*. Delhi: Cosmo Publications.

Veeraraghavan, V.&Shetgovekar,S.(2016).Textbook of Parametric and Non-Parametric Statistics. New Delhi: Sage.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.