

SEMESTER-V

CPSY-317

STATISTICS (Theory)

Credit Hour: 3

Type: Major

Course Objectives

This Course is designed to train the Students in theoretical as well as applied statistics with particular reference to Psychology. The Students will have a grasp over the concepts, theoretical rationale of use of certain statistical analysis and also to learn to carry out these analyses.

Course Contents

- **Introduction**

- Defining statistics

- Importance of statistics in Psychology

- Descriptive statistics and graphic representation of data Data: Types of data

- Frequency distribution: Cumulative frequency distribution Histogram, Polygon,

- Pictograph, Bar Diagram, Pie Chart Measures of central tendency

- Measures of dispersion

- **Testing Hypotheses through z-test**

- Logics of hypothesis testing

- Directional hypothesis test

- Introduction to z-scores

- Standardized distribution based on z-scores

- Computing z-scores for a sample

- Effect size and statistical power.

- Basic assumptions

- Critical Region, One Tailed & Two Tailed Tests

- Type One and Type Two (I & II) Errors, Level of Significance: concept of alpha and

- **Normal & Binomial Distribution**

Normal distribution: Its properties and application.

Binomial distribution: Its properties and application.

- **Sampling Distributions and related concepts**

Introduction, sample design and sampling frame, bias, sampling and non-sampling errors, sampling with and without replacement, determining sample size, sampling distributions for single mean and proportion, difference of means and proportions. P_value interpretation.

PRACTICAL

- **Introduction to Statistical Package for Social Sciences (SPSS)**

Basic features of SPSS

Preparing Data for entering in SPSS

Preparing variable view file

Entering statistical data in data view file

Computing and recoding techniques

Graphical representation of data

Calculating descriptive statistics (Including Mean, Median, Mode and Standard deviation)

Inferential Statistics

Basic assumptions / rationale and when to use which inferential statistic

Critical Region, One Tailed & Two Tailed Tests

Interpreting SPSS outputs.

Course Outcomes

At the completion of this Course the Student will be able to understand types of statistics and apply appropriate statistics keeping in view the type of data and will be able to apply statistical techniques for data analysis in accordance with objectives and hypotheses being formulated in research

Recommended Books:

- Casella, G., & Berger, R. L. (2002). *Statistical inferences*. (2nd ed.). Australia: Thomson Learning.
- Corder, G. W. (2009). *Nonparametric statistics for non-statisticians*. London: John Wiley & Sons.
- Field, A. (2013). *Discovering statistics using SPSS*. (4th ed.). Los Angeles: Sage Publications.
- Gelfand, H. (2010). *Mastering APA style*. (6th ed.). Los Angeles: Sage Publications.
- Gravetter, F. J., & Wallnau, L. B. (2013). *Statistics for the behavioral sciences*. (6th ed.) Australia: Wadsworth Thomson Learning.
- Howell, D. C. (2011). *Fundamental statistics for the behavioral sciences*. (7th ed.). Australia: Wadsworth Publishing Company.
- McClane, J. T. (2000). *A first Course in statistics*. (7th ed.). USA: Prentice Hall.
- Miles, J., & Banyard, P. (2007). *Understanding and using statistics in Psychology*. London: Sage Publications.
- Minimum, E.W., King, B.M., & Bear, G. (2009). *Statistical reasoning in Psychology and education*. (3rd ed.). New Dehli: Wiley.
- Muhammad, F. (2005). *Statistical methods and data analysis*. Pakistan: Kitab Markaz.
- Pelosi, M. K., & Sandifer, T. M. (2003). *Elementary statistics*. USA: John Wiley & Sons, Inc.
- Tabachnick, B. G. (2013). *Using multivariate statistics*. (6th ed.). Boston: Pearson Education Boston.
- Thompson, B. (2006). *Foundations of behavioral statistics: An insight based approach*. New York: The Guilford.