

## Core VI

### Psychological Statistics – I

#### Introduction:

The course is designed to equip students with knowledge in the fundamentals of statistics and research methods so that they understand the application of statistics to different research problems in psychology.

#### Course Outcomes:

- To help students develop knowledge and understanding of the application of Statistics within Psychology
- To help students develop critical thinking for application of appropriate statistical analysis in Psychological research

#### Unit I: Fundamentals of statistics

- Meaning and scope of statistics, Nature and classification of variables- Categorical and Continuous, statistics and Parameter- Parametric and non-parametric statistics,
- Drawing frequency distribution; Graphical representation of grouped data-Polygon, Histogram, Ogive.

#### Learning Outcomes

- Understand the nature of psychological variables and how to measure them using appropriate scale.
- Students will be able to apply graphical data presentation skills in any research area.

#### Unit II: Measures of Statistics

- Measures of Central Tendency- Characteristics of mean, median and mode; Computation of mean, median, and mode
- Measures of Variability- Concept of variability, computation of semi-inter quartile range, Standard deviation and variance, Co-efficient of variation

#### Learning Outcomes

- The processes of describing and reporting statistical data.

#### Unit III: Probability and hypothesis testing

- Concept of Probability; Characteristics of Normal Probability curve, Applications of NPC, Deviation from NPC- Skewness and Kurtosis
- The logic of hypothesis testing; Level of significance; Errors in inference: Type I and Type II error; one tailed and two tailed tests, Computation of 't' for independent and dependent samples

#### Learning Outcomes

- Students will be able to define the use of normal probability curve for of hypothesis testing including estimation of errors.
- The methods of drawing inferences and conclusions for hypothesis testing by using appropriate statistical analysis.

#### **Unit IV: Practical**

- Computer Awareness: To be familiar with software packages of statistics and their applications (any software like: MS Excel/ Vassarstats).
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#### **Text Books:**

- ✓ *Aron, A., Aron, E.N., & Coups, E.J. (2007). Statistics for Psychology. (4<sup>th</sup> Ed.) India: Pearson Education, Prentice Hall.*
- ✓ *Ferguson, G.A. & Takane, Y. (1989). Statistical Analysis in Psychology & Education, Tata McGraw Hill Publishing Company, New Delhi*
- ✓ *Garrett, H. E. & Woodworth, R.S. (1985). Psychology in Statistics and Education, Vakils, Feffer & Simons Ltd. Mumbai*

#### **Reference Books:**

- ✓ *Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, Divya Prakashani, Samantarapur, Bhubaneswar.*
- ✓ *Mishra, G.C. (2018). Applications of Statistics in Psychology and Education, Kalyani Publisher, New Delhi*
- ✓ *Siegal, S. (1994). Nonparametric Statistics. McGraw Hill, New Delhi*
- ✓ *Mohanty, B. and Misra, S. (2017). A text book of Basic Statistics. Laxmi Prakashans, Bhubaneswar, Odisha*
- ✓ *Singh, A.K. (2019). Tests, measurement and research methods in behavioral sciences. 6<sup>th</sup> edition. Bharati bhawan*