

UNIVERSITY OF MADRAS
B.Sc. DEGREE COURSE IN PSYCHOLOGY
SYLLABUS WITH EFFECT FROM 2020-2021

BPY-DSA03

ALLIED-III: STATISTICS IN PSYCHOLOGY

Instr.Hrs.: 6

Credits : 5

Year : II

Semester: III

Course Learning Outcome

After completion of the Statistics in psychology course, students will be able to:

1. Explain the different levels of measurement and methods of organizing data in statistics
2. Make use of mean, median, mode and variability
3. Illustrate and apply the concepts of normal distribution
4. Find out correlation
5. Test for significance in hypotheses testing
6. Select and utilize appropriate non-parametric statistics

UNIT I: INTRODUCTION TO STATISTICS

Meaning of statistics-Importance of Statistics in Psychology –Parameters and Estimates- Descriptive Statistics- Inferential Statistics-Variables and their types; Levels of measurement: Nominal Scale- Ordinal Scale- Interval Scale- Ratio Scale; Frequency tables: Making a Frequency Table -Frequency tables for Nominal Variables- Grouped Frequency Tables, Frequency Graphs: Histogram, Frequency Polygon.

UNIT II: CENTRAL TENDENCY AND VARIABILITY

Central Tendency: The Mean- from Frequency Distributions - Assumed Mean Method- Properties of Mean. Median – Calculation of Median from Ungrouped data- Calculation of Median from a Frequency Distribution. The Mode- Calculation of Mode in a Frequency Distribution.Comparison of Mean, Median and Mode- Guidelines for the Use of Central Tendencies.

Variability: the Range- Calculation of Range- the Average Deviation- Calculation of the Average Deviation. The Semi Interquartile Range- Calculation of Q1, Q3 and Quartile Deviation. The variance and the Standard Deviation- Methods of Calculating the Variance and the Standard Deviation from Ungrouped data- Calculation of Standard Deviation from Grouped data- Calculation of Standard Deviation from Assumed Mean.

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UNIT III: NORMAL DISTRIBUTION AND CORRELATION

The Normal Distribution: Properties of the Normal Curve- Areas under the Normal Curve- Importance of Normal Distribution- Skewness- Kurtosis- Importance of measures of Skewness and Kurtosis. The Correlation: the Concept of Correlation- the Scatter Plot- the Product Moment Correlation- Calculation of Product Moment Correlation- Spearman's Rank- Difference Correlation Co-efficient- Properties of Correlation Co-efficient.

UNIT IV: HYPOTHESIS TESTING AND INFERENCE STATISTICS

Hypothesis Testing: the Core logic of Hypothesis Testing –the Hypothesis Testing Process- One Tailed and Two Tailed Hypothesis Tests. Decision Errors: Type I Error- Type II Error, Inferential Statistics: 't' Tests- the 't' test for a Single Sample- the 't' test for a Dependent Means- Assumptions of Single Sample and the 't' Test for a Dependent Means. The 't' test for Independent Means: the Distribution of Differences between Means- Hypothesis Testing with a 't' test for Independent Means.

UNIT V: NON-PARAMETRIC METHODS

The Chi-Square: Degrees of Freedom- Test of the Hypothesis of Normality- Calculation of the Chi-Square for 2x2 tables- Yates' Correction for Continuity- Assumptions of the Chi Square test, The Non-parametric Methods: Sign test- Assumptions and Uses of Sign Test- the Median Test- Run Test- the Kolmogorov and Smirnov Two Sample test- Precautions of the use of the Non-parametric tests.

REFERENCES

1. Howell, D. (2012). *Statistical method for psychology*. Delhi, India: Cengage Learning.
2. Agresti, A., & Finlay, B. (2013). *Statistical methods for the social sciences*. Hoboken, NJ: Pearson Education
3. Aron, A., Aron, E. N., & Coups, E. J. (2006). *Statistics for psychology*. New Delhi, India: Pearson India Education Services Pvt Ltd.
4. Heiman, G. (2013). *Basic statistics for the behavioral sciences*. Belmont, CA: Cengage Learning.
5. Bear, G., King, B.M., & Minium, E. W. (2008). *Statistical reasoning in psychology and education*. Bengaluru, India: Wiley India Private Limited.
6. Gupta, S.P. (1999). *Statistical methods*. New Delhi, India: Sultan Chand & Sons
7. Garrett, H. E. (2006): *Statistics in psychology and education*. New Delhi, India: Paragon International Publishers.

WEB RESOURCES

1. <http://www.edx.org/learn/statistics>