M.ED

CORE COURSE 4

STATISTICS IN EDUCATION

FIRST YEAR / SEMESTER II

Objectives

The students will be able to

- know the different types of graphical representation
- correlate the variables
- verify the hypotheses with relevant statistical measures
- apply percentiles in new situation
- differentiate parametric and non parametric test

UNIT I : ORGANISATION OF DATA

Organisation of Data – Graphical and Statistical Representation – Measures of Scales, Nominal, Ordinal, Interval,Ratio- Organisation and Tabulation of Data – Classification and Frequency Distributions – Graphical Representation – Bar diagram, Pie chart , histogram ,Frequency polygon, Frequency Curve, ogive, Overlapping Distribution –Measures of Central tendency, The Mean, Median, Mode – Measures of Dispersion ,The Range ,Quartile Deviation, Average Deviation, Standrad Deviation and Variance.

UNIT II - CORRELATION AND REGRESSION ANALYSIS

Correlation - Meaning – Properties - The Product Moment Correlation - The Rank Correlation - When Ties Exist and When Ties Not Exist - Biserial Correlation - Point Biserial Correlation - Tetrachonic Correlation - The PHI Coefficient. Regression Model – Estimation Using the Regression Line - The Method of Least Squares – Alternative Approach - Use of Deviations from Means of X and Y - Regression Coefficient - The Standard Error of Estimate- Hypothesis Tests about Regression Relationship.

UNIT III - NORMAL DISTRIBUTION

The Normal Distribution- Properties of Normal Curve-The Equation of Normal Distribution Curve - The Unit Normal Curve - Area Under Normal Curve -Problems and Numericals on Normal Distribution - Importance of the Normal Distribution - Divergence from Normality – Skewness, Kurtosis Measures of Skewnwss and Kurtosis. Sampling Distribution and the Standard Error of The Mean- Computation of Standard Error of Mean - Application And Interpretation of SE_M - The Distribution of T Degrees of Freedom - Level of Significance - Application And Interpretation of SE_M – The Standard Error of Median - The Standard Error of a Standard Deviation - The Standard Error of Percentages and Proportions – The Standard of Correlational Coefficient – Conversion of R's Into Fisher's Z Function.

UNIT IV - SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS AND OTHER STATISTICS

The Null Hypothesis – The Process - Standard Error of the Difference Between Two Independent Means -(Large Samples) - The SE of Difference Between Means in Small Independent Sample - The SE of Difference between Means Two Correlated Means - Difference Method (Small Sample) – The Significance of the Difference Between Standard Deviations - The Significance of the Difference Between Two Independent Proportions - The Significance of the Difference Between Two Correlated Proportions - The Significance of the Difference Between Two R's – Two Tailed and One Tailed Tests of Significance – Type I and Type II Errors.

The Analysis Of Variance (ANOVA) The Rationale- One Way or Single Classification ANOVA – Deviation Score Method and Raw Score Method - Post ANOVA Test of Difference by Use of 'T' - Two Way of Double Classification ANOVA - Assumptions Underlying the ANOVA - General Uses and Limitations if ANOVA.

UNIT V - PERCENTILES AND PERCENTILE RANKS & THE CHI SQUARE TEST:

Meaning and Definition of Percentile – Quartiles- Deciles- Percentile Rank – Definition and Computation of Percentile Rank – Utility of Percentile and Percentile Rank. Degrees of Freedom-Test of Hypothesis of Equal Probability- Test of Hypothesis

of Independence (Difference) - Test of Hypothesis of Normality - Calculation of Chi-Square for 2*2tables - Yates Correlation for Continuity - Chi-Square from Percentages - General Observations on Chi-Square.

REFERENCES

- Adiseshiah, W.T.V., & S., Educational and Social Research, Coimbatore, Volume Pathipagam, 1977.
- Best, John, W. Research in Education, Prentice Hall of India Pvt. Limited, 4th Edition, New Delhi, 1982.
- Devadas, Rajammal, P. & Kulandaivel, K.A., Handbook of Methodology of Research, Coimbatore, Sri R. K. Mission Vidyalaya Teacher's College, 1976.
- Fox, D.J., The Research Process in Education, New York: Holt, Rinehart and Winston, 1969.
- Garrett Henry V., Statistics in Psychology and Education, Vakils, Feffer & Sons Pvt. Ltd., Bombay.
- Good, Carter, V. Methodology of Educational Research, New York, Appleton – Century Croft, Inc., 1972.
- Guilford, J.P., Psychometric Methods, New York, McGraw Hill Book Co. Inc., 1954.
- Guilford, J.P., Fundamental Statistics in Psychology and Education New York, McGraw Hill Book Co., 1965.
- Kerlinger, F.N., Foundation of Behavioural Research, New York, Holt, Rinehart and Winston, 1973.
- Lindquist, E.F. Statistical analysis in Educational Research, Boston, Houghton Mifflin & Co, 1970
- Mouly, G.J., The Science of Educational Research, New Delhi Eurasia Publishing House Pvt. Ltd., 1964.
- Shukia, S.P., Elements of Educational Research, Bombay, Allied Publishers Pvt. Ltd., Third Edition, 1964.
- Travers, Robert, M.W., Introduction to Educational Research, New York, Macmillan Co., 1964.
- Van Dalen, D.B. Understanding Educational Research, New York, McGraw Hill Co., 1973.