

M.Phil. / Ph.D. Education (Syllabus)

Paper – 1: Research Methodology and Educational Statistics

Unit I : Educational Research

- Meaning, aims, nature and scope of educational research
- Characteristics and prerequisites of educational research
- Types of educational research
- Research needs in different subjects of education.

Unit II : Research Problem

- Meaning of research problem
- Sources of research problem
- Criteria / Characteristics of a good research problem
- Errors in selecting a research problem.

Unit III : Methods of Educational Research

- Qualitative research – phenomenological studies, Ethnographical studies, Case studies, Historical studies, Philosophical studies.
- Quantitative research – experimental research, Quasi- experimental research, Surveys, Correlation studies.
- Action research

Unit – IV : Developing a Research Proposal

- Format of research proposal
- Individual research proposal
- Institutional proposal

Unit – V : Hypothesis

- Meaning
- Types of hypothesis.

Unit – VI : Sampling

- Sampling and Population
- Techniques sampling selection
- Characteristics of a good sample
- Sampling errors and how to reduce them

Unit – VII : Tools and Techniques of Data Collection

- Checklist
- Data schedule
- Observation
- Opinionnaire
- Interview
- Sociometric techniques
- Questionnaire
- Rating scales
- Interview schedules
- Reliability and validity of various tools and techniques

Unit – VIII : Research Report

- Format of the Research Report
- Style of writing the report
- References and Bibliography

Unit – IX : Evaluation of Research

- Criteria of evaluation

Unit – X : Descriptive Statistics

- Tabulation, organization and graphical representation of quantitative data.
- Measures of central tendencies: Mean, Median and Mode
- Measures of Variability : Range – Q.D; S.D; A.D; and Coefficient of Variation
- Measures of Relative Position: Percentiles, Percentile Ranks, Standards Scores, Stanine Scores, T- Scores
- Normal Probability Distribution, properties of normal curve, applications of normal curve, Divergence from Normality : Skewness and Kurtosis

Unit – XI : Correlational Techniques

- Karl Pearson's Product Moment Correlation Coefficient 'r'
- Spearman's Rank order correlation coefficient (rho)
- Regression and Prediction
- Biserial, Point biserial, Tetrachoric and Phi-Coefficient
- Partial and Multiple Correlation

Unit – XII : Statistical Inference

- Concept of Standard Error and its uses
- The Significance of Statistical Measures
- Testing the Significance of difference between two means Z-Test, T-Test
- Analysis of variance and Analysis of covariance : One way Anova, Post – Anova
Test of difference by use of 't', Two-way Anova, Analysis of covariance.

Unit – XIII : Non-parametric Tests

- Chi-square test
- Median test
- Mann – Whitney U test.
- Kolmogorov – Smirnov two sample test

Unit – XIV – Multivariate Analysis

Factor Analysis

Cluster Analysis

Discriminant Analysis

Unit – XV : Reliability and Validity of Test Scores

- The reliability of the test
- The validity of the test
- Item analysis

Reference Books:

1. Research in Education – Best John W. and James V. Kahn
2. Elements of Educational Research – Sukhia, S.P., P.V. Mehrotra and R.N. Mehrotra.
3. A Handbook on Educational Research – N.C.T.E.
4. Educational Tests and Measurement, An Introduction – Anthony J.Nitco
5. Methodology of Research Education – Sidhu, K.S.
6. Fundamentals of Educational Research – Aggarwal
7. Methodology of Educational Research – Koul, Lokesh.
8. Methodology of Educational Research – Sharma, R.N. and Sharma, R.L.
9. Research Methodology – Methods & Techniques : Kothari, C.R.
10. Tests, Measurements and Research Methods in Behavioural Sciences – Singh, A.K.
11. Statistical Methods – Y.P. Aggarwal.
12. Statistics in Psychology and Education – Garret, H.E.
13. Statistics in Psychology and Education – Guilford
14. Conducting Educational Research – Bruce W. Tuckman
15. Methods of Statistical Analysis – P.S. Grewal
16. Fundamentals of Statistics – S.C. Gupta and V.K.Kapoor.