

M.Ed. DEGREE PROGRAMME

SEMESTER I

COMMON COURSE

Course Code : 903 METHODS OF EDUCATIONAL RESEARCH AND STATISTICS

COURSE OUTLINE

Contact hours. 108

Max. Weight: 32

Duration of Exam: 3 hrs.

No. of Credits : 4

Course Objectives

1. To acquaint the student with the methods for locating problem areas and research problems.
2. To familiarize the student with the common tools of research and assess their efficiency.
3. To enable the student to use statistical techniques and designs in educational research.
4. To equip the learner in preparing and presenting the research proposal and research report.

COURSE CONTENT

Section – A.

Elements of Research Methods (57 hrs)

Unit I

Introduction to Research: Research as a scientific process, meaning scope, need and importance, characteristics, limitations and functions of educational research. Scientific method and its use in research, Classification of educational research-fundamental, applied and action research and their interrelations. Qualitative and quantitative research,

Paradigms of qualitative research. Ethics of research, Major steps in a Research Process, Designing Research Proposals - Areas of educational research

Unit II

Research Problems: Detection of research areas on the basis of (i) experience, (ii) discussion and (iii) literature type and sources, criteria for selecting and evaluating problems, statement of the problem in different forms, formulation and definition.

Unit III

Review of related research and literature: Purpose, need and types. Survey for theoretical overview regarding empirical studies; different methods of surveying literature, different sources of information regarding related literature - internet, search engines, web sites and E-mail; recording summary of the survey attempted.

Unit IV

Hypothesis: meaning, importance, nature, types and sources of hypothesis, characteristics of a good hypothesis, Formulation and testing of a good hypothesis, directional and non-directional hypothesis, declarative hypothesis, null hypothesis.

Unit V

Variables: Meaning, characteristics and types of variables and interrelationship among different variables. Defining variables as dependent, independent, criterion, predictive, intervening and extraneous.

Methods and Designs of Research: Classification of research methods: Experimental, Different experimental designs, Normative survey, Historical, Descriptive, Case studies, Developmental, Correlational, Positivism, Empiricism, Symbolic Interactionism, Ethnographic, Documentation analysis, and Scalogram analysis.

Unit VI

Tools and Techniques of Research: characteristics, types, construction and uses of tools: questionnaires, schedules, check list, rating scales, attitude scales, opinionnaire inventories, cumulative records, sociometric tests, achievement tests, aptitude test and intelligence test etc. Techniques: Testing, survey, experimentation, observation, interview, qualitative analysis. Reliability and validity of tools, appropriateness of techniques.

Unit VII

Sampling: concept and need for sampling, types of sampling, different methods of sampling, unit of sampling, Population, sampling techniques, advantages and disadvantages of the various techniques, characteristics of a good sample, criteria for fixing sample size, statistical concept as applied in small and large samples, Test of significance of statistical measures, errors in sampling, control of different errors.

Unit VIII

Collection and analysis of data: Procedure of data collection, scoring of data, editing, coding, tabulation, analysis and interpretation of data in terms of

- (i) Objective
- (ii) Hypothesis
- (iii) Limitations of tools and data
- (iv) Earlier findings
- (v) Unstudied factors
- (vi) Intervening variables
- (vii) Collecting results obtained through different techniques of analysis

Unit IX

Research Report: Formal composition, pagination, title pages, chapterisation, style of writing, preparing tables for presentation of data, Characteristics of a good research report, systems of indicating references, use of abbreviation, footnote, bibliography and appendices.

Unit X

Evaluation of Research report: criteria for evaluation, format, organization of data, reference materials and Bibliography, Validity and limitation of findings.

Section – B

Statistics (51 hrs)

Unit I

Tabulation of data: Nature of educational data, organization and tabulation of data-graphical representation of data in the form of bar

diagram, histogram, frequency polygons, sector graphs, smoothed frequency curve, ogive etc. properties of frequency distributions.

Unit II

Measures of central tendency: Meaning - computation of arithmetic mean, median and mode. When to use different measures. Merits and demerits of different measures.

Unit III

Measures of variability: Meaning, Measures of variability as supplements to the measures of central tendency, computation of common measures of variability like the Range, Average Deviation, Standard Deviation and Quartile Deviation - their merits and demerits.

Unit IV

Measures of relative position-use and computation of quartile, percentiles, percentile rank and standard scores

Unit V

Normal Distribution: Characteristics of Normal probability, use of standard score in finding areas under the normal curve. Applications of Normal Probability curve, Deviation from normality and underlying causes. Concept, uses and computation of skewness and kurtosis, t-distribution: concept and nature, use of t-table, concept of Degrees of Freedom.

Unit VI

Measures of Relationships: concept, types, co-efficient of correlation, calculation of Spearman's rank co-efficient correlation and Pearson's

product moment correlation co-efficient, uses and interpretation. Application of the concept of correlation to research, theoretical discussion of the application of the correlation concept to measures of relationships, prediction, item analysis, estimation of reliability and validity of tests and factor analysis prediction: concept of regression, framing of regression equations. Accuracy of prediction and their uses.

Unit VII

Test of significance of statistical measures: Mean, standard deviations, product-moment correlation including use of Fisher's Z table, the concept of confidence limits, various levels. Test of significance for differences: hypothesis testing-two tailed and one tailed tests of significance. Errors in making inferences, Type I and Type II errors, testing of the null hypothesis, tests of significance of difference between percentages, difference between correlation in large independent samples, difference between means of small independent samples, difference between means of large independent samples, difference between means of correlated or dependent samples.

Analysis of variance and co-variance - concept, way, assumptions, uses, computations and use of f-table, ANOVA, ANCOVA .

Unit VIII

Non-parametric statistics: Chi-square test, concept, uses, computation and use of chi-square table.

Practicum (Any two items)

- Review of two published papers: one quantitative and the other qualitative
- Review of an M.Ed. or an M.Phil or a Ph.D dissertation
- Selection of a problem and developing a research design
- Development of a research proposal for M.Ed. dissertation and its seminar presentation
- Preparing of a paper dealing with graphical representation of data given in research report
- A critical presentation of the use of statistical techniques in testing hypothesis in a research report

References

- 1 Qualitative Inquiry and Research Design, John W Creswell (2006).
- 2 Using software in Qualitative Research Ann Lewis and Christina Silver (2007).
- 3 Composing Qualitative Research Karen Golden – Biddle and Karen Locue (2006)
- 4 Quartile Regression ,Lingoxin Hao and Daniel and Naiman (2007)
- 5 Doing Development Research Vandana Desai and Robert B Potter (2006).
- 6 Developmental Research Methods Scatt A Miller (2007).
- 7 Statistical Methods for Practice and Research Ajai S Gaur and Sanjaya S Gaur (2006).
- 8 100 statistical Tests. Gopal K Kanji (2006).
- 9 Internet Research Skills. Niall O Dochartaigh (2007).

- 10 Developing Effective Research Proposals. Keith F Punch (2006).
- 11 Interpreting Standardized Test Score. Craig A Mertler (2007).
12. Best J. W. Research in Education, New Delhi: Prentice Hall, 1951.
- 13 Good C.V. et al. Methodology of Educational Research, New York: Prentice Hall, 1951.
- 14 Traver, R.M.V.S An introduction to Educational Research New York: Mc Graw Hill, 1964
- 15 Wiseman S Reporting Research in Education, Manchester: Manchester University Press, 1952
- 16 Varma. M. An Introduction to Educational and Psychological Research, Bombay: Asia Publishing House, 1965.
- 17 Mouly G.J. The Science of Educational Research, New Delhi: Eurasia, 1964.
- 18 Corey S.M Action Research to Improve school practices. New York: Teacher's College, Columbia University, 1953.
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- 20 Whitney B. Elements of Research Bombay: Asia Publishing House, 1950.
- 21 Young Pauline Scientific Social Surveys and Research
- 22 Rummell.F. J. An Introduction to Research Procedures in Education, New York: Harper and Row Publishers 1964.
- 23 Fox, David J. The Research Process in Education
- 24 Kerlinger D. Research in Behavioral Science
- 25 Koul , Lokesh Methodology of Educational Research. New Delhi: Vikas Publishing Company 2002.
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- 29 Mc Burney, H. Research Methods Australia. Wordsworth, 2001.
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ELEMENTS OF STATISTICS

- 1 Garret H.E Statistics in Psychology and Education, Bombay, Vakils, Feffner and Simons P. Ltd. 1961.
- 2 Guilford J.P Fundamentals Statistics Psychology and Education. New York: Mc Graw Hill, 1990.
3. Lindquist E.P Designing and Analysis Experiments in Psychology Education, Bostern: Hough Miffin, 1953.
4. Downine N.M Basic Statistical Methods. New York: Harper and Health Row Publishers, ...
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6. Tate M.W. Statistics in Education Psychology, New Statistics Education and Psychology, New York: Mc Graw Hill, 1965.
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9. Frank, Harry & Althoen, Steven Statistics. Concepts and Applications. Cambridge. Cambridge University
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10. Willis, Jerry W. (2007) Foundations of Qualitative Research : Interpretive and Critical Approaches New Delhi: Sage Publications.
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12. Keith, F. Punch (2009). Introduction to Research Methods in Education. Sage Publication.

M.Ed. Degree Examination - Semester I
Model Question Paper
COURSE CODE: 903 – METHODS OF EDUCATIONAL RESEARCH AND
STATISTICS

Time: Three Hours

Maximum Weight : 32

Part A

Answer any two questions
Each question carries 4 weights.

1. a) What is a case study?
 b) What are its special features?
 c) Illustrate how you would attempt a case study?
2. a) Explain the characteristics of experimental method in educational research.
 b) Select an appropriate problem and explain how you would conduct a study based on it.
3. a) Of the different measures of dispersion, which would you prefer and why?
 b) How would you find out the standard deviation of a set of raw scores obtained by 10 students? Illustrate.
4. What are hypothesis? Explain the role of it in Educational Research. Discuss the different types of hypothesis with examples.

(2x4=8 weight)

PART – B

Answer any six questions. Each question carries 2 weight

- 5 .Calculate a) Mean b) Median and c) Standard Deviation from the following distribution.

Class Interval	70 - 74	65 - 69	60 - 64	55- 59	50 - 54	45 - 49	40 - 44	35 - 39
Frequency	2	4	4	8	10	5	4	3

6. Bring out the relevance of “review of related literature and studies”, while attempting research.
7. Do you prefer a “structured” or “non – structured” interview Why? Give an example for each.
8. .Explain how and where you would attempt a Chi-square test.
9. Bring out the meaning of the term ANCOVA. Suggest an appropriate situation where this can be attempted.
10. Explain how you would establish the “validity” of a newly constructed achievement test.
11. Find out the correlation coefficient using rank difference method from the following data.
 Scores in English : 89 95 72 56 72
 Scores in Hindi : 74 80 64 64 60
12. Mention any two types of attitude scales and compare their merits.

(6x2=12 weight)

Part-C

Answer six questions

Each question carries 1 weight

13. What do you mean by a research design?
14. What is the purpose of formulating hypothesis in educational research?
15. Explain the term action research.
16. .Distinguish between primary data and secondary data.
17. Explain the idea “Experimental designs”?

18. What is a null hypothesis?
19. What is documentary analysis?
20. What is purposive sampling?

(6x1=6 weight)

Part D

Answer all questions. Each question carries $\frac{1}{2}$ weight

21. Define random sampling technique.
22. What is a frequency curve?
23. Write the important features of two-tailed test.
24. What does the standard error of statistics measure?
25. Differentiate external criticism from internal criticism.
26. What is action research?
27. Specify the sources of selection of the problem.
28. What is quasi-experiment?
29. Differentiate between population and sample.
30. Define qualitative data.
31. What do you mean by degrees of freedom?
32. Name different measures of variability.

(12x $\frac{1}{2}$ = 6 weight)