

ST. XAVIER'S COLLEGE OF EDUCATION (AUTONOMOUS), DIGHA, PATNA
COURSE STRUCTURE OF Ph.D. PROGRAMME IN EDUCATION**COURSE OBJECTIVES**

To enable the students to gain understanding and skills on-

- The meaning of scientific method, scientific inquiry, Paradigm, theory and their Implications for educational research.
- The characteristics of philosophical, psychological and sociological and historical researches in education.
- The different Qualitative and Quantitative approaches in research.
- The techniques of developing a research proposal.
- The concept of Sampling and Formulation of Hypothesis.
- The various types of tools of data collection and their standardization.
- Data analysis using techniques of research both quantitative and qualitative.
- Descriptive and Inferential techniques of data analysis.
- Use of Computer in different stages of research and data analysis.
- Qualities of a Good research Report.
- Ethical Issues in Research.

P1: METHODS OF RESEARCH AND QUANTITATIVE DATA ANALYSIS

F.M.-100 (Credits: 04)

THEORY 70 marks

CONTENTS**UNIT-I Nature of Research, Knowledge and Inquiry**

- Nature and sources of knowledge, scientific inquiry, scientific method.
- Paradigm, theory, model and approach in Research: positivist and non-positivist (humanities) paradigms and their implications for educational research.
- Methods of Research: Quantitative Methods and Qualitative Methods; Qualitative data: Methods of its analysis with emphasis on content analysis; analysis of interview based data and observation based data.
- Philosophical, psychological, sociological and historical orientation in educational research.
- Interdisciplinary and intra-disciplinary research and its implications.

UNIT-II Descriptive Statistics and NPC

- Organization and representation of Data: Frequency distribution, Frequency Polygon, Histogram, Ogive, Smoothed Frequency Curve, Cumulative frequency curve.
- Scales of measurement- Nominal, Ordinal, Interval and Ratio.

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- Concept, calculation and uses of
 - a) Measures of central tendencies,
 - b) Measures of variability.
 - c) Percentiles and Percentile Ranks
- Properties and uses of normal distribution and NPC.

UNIT- III Inferential Statistics

- Meaning and purpose of parametric test and non-parametric test and their differences
- Parametric Tests -
 - a) Tests of significance of mean and of difference between means (both large and small samples) one and two tailed tests.
 - b) "t" test, its meaning, purpose; assumptions and uses.
 - c) Analysis of variance technique of "F" test.
- Non-Parametric Tests -
 - a) Chi-square test, its purpose and use.
 - b) Median test and sign test.

UNIT-IV Computer Applications for Data Analysis and Research

- Use of Spreadsheet applications: Using formulas and functions, Data storing, Features for Statistical data analysis, Generating charts/ graph and other features. Tools used may be Microsoft Excel, Open office or similar tool, plotting of graphs.
- Use of word processing & Presentation skills: creating presentation, showing presentation. Tools used may be Microsoft Power Point, Open Office or similar tool.
- Internet and its application: E-mail, WWW, Web 2.0 tools, Web browsing, Using search engine like Google, Yahoo etc, Using advanced search techniques.
- Idea of MOOCs and its development, Popular MOOCs platforms: Indian and Global
- Using SPSS/PSPP for Data analysis: Working with Parametric and Non-Parametric tests

PRACTICUM: 30 marks

Prepare a Report and Presentation on any two (02) of the following:

- I. Review of one reference book (related to your area of interest/proposed area of research)(15 marks)
- II. Literature survey on the chosen problem (15 marks)
- III. Performing a Parametric test and a Non-Parametric test on any set of supplied data using SPSS or any other related analysis software. (15 marks)

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P2: METHODS OF EDUCATIONAL RESEARCH AND ADVANCED STATISTICS

F.M.-100 (Credits: 04)

THEORY 70 marks

CONTENTS

UNIT- I Methods of Educational Research

- Fundamental, Applied and Action Research.
- Experimental & Ex-post facto Research.
- Philosophical & Historical Research; survey; Case Study; Developmental; Ethnographic; Documentary-analysis
- Hypothesis - nature, definition, types, sources, characteristics of a good hypothesis; directional and non-directional hypothesis, Level of Significance, degrees of freedom, Type I & II error
- Sampling: Unit of sampling, population; techniques (a) probability sampling techniques & (b) non-probability sampling techniques; Characteristics of a good sample; Sampling errors and how to reduce them; Tables of Random Numbers.

UNIT- II Developing a Research Proposal and Research Report

- Problem and its sources; Selection and Definition of problem
- Format , Style, content and steps in Writing a Research Proposal(PhD and Research Grant)
- Format, Style, content and chapterisation of a Research Report(Thesis, Article, Project Book and Book Review)
- Techniques and sources in reviewing literature, citing and referencing styles
- Ethical Issues in Writing a research Report(Anti-plagiarism and Copyright Rules)

UNIT-III Tools and Techniques of Data Collection

- Meaning, Nature, Development and Standardization
- Observation; Interview; Sociometric techniques.
- Questionnaire, Rating scales; Interview schedules, Attitude scales and achievement test.
- Reliability and validity of various tools and techniques.
- Method, criteria and standards of evaluating a research Report (Thesis Evaluation , Article Evaluation-Impact Factor and Indexing)
- Validity and Limitations of findings; factors influencing validity of research; internal vs. external validity; how to increase validity of research findings.

UNIT- IV Advanced Statistical Techniques

- Advanced Techniques of Correlation
 - a) Meaning and purpose of correlation.
 - b) Concepts and Uses – Rank order & Pearson's Correlations; Bi-serial, point bi-serial- partial and multiple correlation, tetra-choric and phi-coefficient.

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- Regression and prediction
- Analysis of Co-variance technique.
- Factor-Analysis Technique

PRACTICUM 30 marks

Prepare a Report and Presentation on any two (02) of the following:

- I. Writing a Research Proposal of Ph.D. study (related to your area of interest/proposed area of research) (15 marks)
- II. Development and standardization of one tool of data collection (qualitative/quantitative)- (15 marks)
- III. Writing a research paper on an educational topic (qualitative/quantitative)- (15 marks)

SUGGESTED READINGS FOR THE COURSE

- Best, J.W. and Kahn, J. V., Research in Education 7th Edn., New Delhi: Prentice Hall of India Pvt. Ltd., 1995.
- Bogdan, R.C. and Taylor, S.J. *Introduction to qualitative research methods: A phenomenological approach to the social sciences*, Boston: Allyn & Bacon, 1975.
- Cohen, L. & Manion L., Research Methods in Education, London Groom Helm Ltd., 1980. Corey, S.M. & Shukla J.K., Practical Classroom Research by Teachers, New Delhi: National Institute of Basic Education, 1962
- Edwards, A. L., Experimental Designs in Psychological Research, New York: Holt, Rinehart & Winston Inc., 1960.
- Ferguson, G A., Statistical Analysis in Psychology and Education, 5 Ed., Tokyo: McGraw Hill, Kegakusha Ltd., 1981.
- Festinger, U and Katz, D. (Eds.) Research Methods in Behavioural Sciences, New York: Holt, Rinehart & Winston 1970.
- Fox, J. D., The Research Process in Education, New York: D. Van Nostrand, 1962. Gage, N.L. (Ed.), Handbook of Research in Teaching, Chicago: Rand McNally, 1963 Garrett, H.E., Statistics in Psychology and Education, Bombay: Vakils, Feffer And Simons Pvt. Ltd., 1969.

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- Goode, W. J. and Hill, Method of Social Research in Teaching, Mc Graw Hill, 1952. Guilford, J.P. & Freachter, B., Fundamental Statistics in Psychology and Education, 6th edn., Tokyo: Mc Graw Hill Kegakusha Ltd., 1978
- Kaul, L. Methodology of Educational Research, New Delhi: Vikas Pub. House, 1994. Kerlinger, F.N. Foundations of Behavioural Research New York: Holt, Rinehart and Winston Inc. 1973.
- Kirk, J. and Miller, M.L. *Reliability and Validity in Qualitative Research*, Sage Publications, Newbury Park, California, 1986.
- Lehmann, I. J. & Mearens W.A. (Eds.), Educational Research Readings in Forces, IBH Publishing Co., 1979.
- Lindquist, E.F., Statistical Analysis in Educational Research, New Delhi: Oxford & IBHPublishing Company Co., 1970.
- Miles, M.B. and Huberman, A.M. *Qualitative Data Analysis: A Sourcebook of New Methods*, Sage Publications, Newbury Park, CA, 1984.
- Minium E.W., Statistical Reasoning in Psychology and Education, New York: Willey, 1978.
- Moulay G. J., Science of Educational Research, New Delhi: Eurasia. 1964.
- Strauss, Anselm and Juliet Corbin. 1990. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park, CA: Sage Publications.
- Sukhia, S.P., Mehrotra, R.N. & Mehrotra, P.V, Elements of Educational Research, 3 ed., Bombay: Allied Publishers, 1974.
- Taylor, S.J. and Bogdan, R. (1984) *Introduction to qualitative research methods: The search for meanings*, New York: John Wiley.
- Van Maanen, J. (ed.). *Qualitative Methodology*, Sage Publications, Newbury Park, CA, 1983.
- Verma, M., Introduction to Educational and Psychological Research, New Delhi: Asia Publishing House, 1969.
- Walker, H.M. & Leo, J, Elementary Statistical Methods, Calcutta: IBH, Publishing Co., 1965.
- Weitzman, E.A. and Miles, M.B. *Computer Programs for Qualitative Data Analysis*, Sage, Thousand Oaks, 1995.
- Wolcott, H.F. *Writing Up Qualitative Research*, Sage Publications, Newbury Park, California, 1990.

Prasanna 5/8/19
जानसेन 05.08.19
M. J. 05-08-19
Nimish 5/8/19
S. S. 5/8/19
Sapna Kumar 5/8/19
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Marie Anne Bourcier 5/8/19
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