

**PG DIPLOMA  
IN  
RESEARCH METHODOLOGY  
AND STATISTICS**

**Semester System**

**COURSES OF STUDY  
2011-2012**

**DEPARTMENT OF EDUCATION  
PANJAB UNIVERSITY  
CHANDIGARH**

To monitor the standards of research; the students need rigorous and comprehensive inputs in research methodology and analytical techniques. The faculty members who are inducted into supervision also at times need such inputs. This course has been overdue now since students who are aspiring for doctoral degrees and supervisors who do not have access to such facilities are increasing in number. The transaction of this course curriculum has been designed while keeping the working research scholars and faculty members of institutions in mind. Masters courses can not afford such details in research methodology due to paucity of time. Hence, this course will also serve as pre-Ph.D. course. This is open to research scholars, JRFs and SRFs, faculty members & also individuals who have completed doctoral degree.

#### **GENERAL RULES:**

1. This module based course is to be completed in one year comprising two semesters.
2. This modular and specialized course will be taught by faculty from many disciplines, hence will utilize services of visiting faculty.
3. The examination will be held twice a year ordinarily in the months of December and May as per university schedule, decided by Controller of Examination, Panjab University.
4. A person who has completed Post Graduation in any stream is eligible to apply for this course.
5. A student must have 75% attendance to qualify for the examinations. A deficiency of 15 lectures may be condoned by Chairperson of the dept. and upto 25 lectures by Dean of University instruction.
6. A student to be successful in the examinations must have obtained 50% marks in aggregate of all subjects.
7. Medium of instruction & examination will be English only.
8. Each successful candidate shall be awarded a Diploma by the University.

#### **FEES:**

Fee will be Rs.10, 000/- total. Examination fee will be as prescribed by university from time to time.

#### **SEATS**

Total number of seats will be 20.

#### **EXAMINATION**

Examination will be in four theory modules, each carrying 100 marks except in IV module which has 80 marks.

#### **OBJECTIVES**

The students will

- a) Comprehend the role of research in theory and practice.
- b) Develop competence to design, execute and report research.
- c) Be able to apply various statistics to analyse data.
- d) Be able to apply research findings in practice.
- e) Be able to understand the role of qualitative and quantitative research in generating knowledge.

## COURSE DETAILS

Subjects	Total marks
1. Introduction to Educational Research Methods	100
2. Experimental Method in Educational research	100
3. Two Seminars on any two topics of the course	100
4. Educational Statistics and SPSS	100
5. Qualitative Research Methods	100
6. Research Proposal	100

## Semester-I

### MODULE I

#### INTRODUCTION TO EDUCATIONAL RESEARCH METHODS

100 MARKS

**Note: This module is assignments based.**

Examiner will set two questions from each unit, student has to attempt five questions, one from each unit.

#### UNIT – I

1. Scientific Method and Research: concept of research in education, purpose of research, types of research – Fundamental, applied and action.
2. Variables: definition, types, independent, dependent, extraneous, secondary, intervening, continuous, discrete, polytomous, dichotomous, attribute, methods of controlling variables.

#### UNIT – II

1. Problem Identification: factors/determinants to decide a problem, sources of problems. Operational definitions: Definition of purpose and functions.
2. Sample: Concept, factors to determine size, techniques of probability and non probability sampling, sample bias, and methods to remove it.

#### UNIT – III

1. Review of literature: Concept, functions, sources, process.
2. Hypothesis: Meaning, formulation, characteristics of a good hypothesis, types and testing.

#### UNIT – IV

3. Tests, Tools and Techniques of research
  - a. Tests: CRT, NRT and Teacher made tests
  - b. Tools: Questionnaire, rating scale, checklist, score card.
  - c. Techniques: Interview, observation, sociometry
  - d. Inventories
4. Construction and Standardization of a tool, translation and adaptation.

#### UNIT – V

5. Descriptive research: Process and limitations of survey method and correlation method.
6. Ex post facto research: Process and limitations, when to use.

#### REFERENCES:

- Best, J.W. (1988). Research in Education. Prentice Hall Inc. Englewood Cliffs, 4<sup>th</sup> Ed.
- Best, John W. & Kahn, J.V. (1995). Research in Education. New Delhi, Prentice Hall of India.
- Gay, L.R. (1992). Educational Research Competencies for Analysis and Application. Maxwell Macmillan International, New York.

- Hopkins, Charles D. (1976). Educational Research: A Structure for Enquiry. Charles, e. Merrill – Publishing Co., A Bell of Owell Co., Columbus Ohio.
- Kaul, Lokesh (1992). Methodology of Educational Research. Vikas Publishing House, New Delhi
- Morris, T. (2006). Social Work Research Methods: Four alternative paradigms. Sage.
- Neuman, W.L. & Kreuger, L.W. (2003). Social Work Research Methods: Qualitative and qualitative applications. Boston: Allyn and Bacon.
- Tuckman, B.W. (1972). Conducting Educational Research. Harcourt Brace, Javanovich.
- Van Dalon, D.B. (1962). Understanding Educational Research – An Introduction. McGraw Hill.
- Varma, M. (1956). Introduction to Educational and Psychological Research. New York, Prentice Hall

**MODULE – II**  
**EXPERIMENTAL METHOD IN EDUCATIONAL RESEARCH**  
**100 MARKS**

Examiner will set two questions from each unit, student has to attempt five questions, one from each unit.

**UNIT – I**

1. Paradigms of research: Positivism, post-positivism, critical theory and constructionism.
2. Experiment: Concept, Essential features, steps of experimental research, variance and its components.

**UNIT – II**

1. Experimental Validity: Concept, internal and external validity and minimizing threats to validity. 8<sup>th</sup> oct, 10.00 kuldeep puri
2. Reliability of experimental research

**UNIT – III**

1. Experimental Designs: Concept, types, Pre-experimental designs. Quasi Experimental designs.
2. True experimental designs

**UNIT – IV**

1. Factorial designs
2. Variables operating in selection of designs.

**UNIT – V**

1. Single subject research designs – AB, ABA, ABAB, Alternate treatment
2. Time Series designs – Statistics employed in SSR designs

**REFERENCES:**

- Best, J.W. (1988). Research in Education. Prentice Hall Inc. Englewood Cliffs, 4<sup>th</sup> Ed.
- Best, John W. & Kahn, J.V. (1995). Research in Education. New Delhi, Prentice Hall of India.
- Gay, L.R. (1992). Educational Research Competencies for Analysis and Application. Maxwell Macmillan International, New York.
- Hopkins, Charles D. (1976). Educational Research: A Structure for Enquiry. Charles, e. Merrill – Publishing Co., A Bell of Owell Co., Columbus Ohio.
- Kaul, Lokesh (1992). Methodology of Educational Research. Vikas Publishing House, New Delhi
- Lindquist, E.F. (1953). Design and Analysis of Experiments in Education and Psychology. Houghton Mifflin Co., Boston
- Neuman, W.L. & Kreuger, L.W. (2003). Social Work Research Methods: Qualitative and qualitative applications. Boston: Allyn and Bacon.

- Tuckman, B.W. (1972). Conducting Educational Research. Harcourt Brace, Javanovich.
- Van Dalon, D.B. (1962). Understanding Educational Research – An Introduction. McGraw Hill.
- Varma, M. (1956). Introduction to Educational and Psychological Research. New York, Prentice Hall

### MODULE – III

Two Seminars on topics of the course, based on student’s choice **100 marks**

## Semester-II

### MODULE- IV

**EDUCATIONAL STATISTICS AND SPSS** **100 marks**  
**THEORY 80 MARKS, PRACTICAL 20 MARKS**

**Examiner will set 8 Questions, two from each unit, student will attempt four questions, one from each.**

#### UNIT – I

1. Metric and non metric data, types of scales, measures of central tendency.
2. Range, AD, Q, SD, selection of method for variability.

#### UNIT – II

1. Normal probability curve, its applications, skewness and kurtosis
2. Correlations – r, p,  $\phi$ , Biserial, point Biserial, tetrachoric, partial and multiple.

#### UNIT – III

1. Regression and path analysis
2. Significance of means and other statistics significance of difference between means, t and CR, ANOVA and its assumptions, ANCOVA.

#### UNIT – IV

1. Non parametric tests, differences between parametric and non parametric tests, sign test, median test, and applications.
2. Mann Whitney U test, Wilcoxon signed Rank Test, Kruscal Wallis test, selection of appropriate methods.

#### UNIT – V

**Use of SPSS (external practical exam)- 20 marks**

#### REFERENCES:

- Garrett, H.E. (1995). Statistics in Psychology and Education. Vakils, Feffer and Simons Pvt. Ltd., Bombay
- Guilford, J.P. (1978). Fundamental Statistics in Psychology and Education. McGraw Hill, 6<sup>th</sup> Ed.
- Guilford, J.P. (1984). Psychometric Methods. N.Y.: Mc Graw Hill.
- Lindquist, E.F. (1960). Elementary Statistical Methods in Psychology and Education. Oxford Book Company, New Delhi.
- Siegel Sidney (1965). Non-Parametric Statistics. McGraw Hill Books Company, New York

## MODULE – V

### QUALITATIVE RESEARCH METHODS

100 marks

10 Questions will be set by examiner, two from each unit. Student will attempt total five, one from each.

#### UNIT – I

1. Concept of qualitative research, differences between quantitative and qualitative research, purposes. Question of generalization.
2. Interview and observation as techniques of qualitative research.

#### UNIT – II

1. Historical research: Steps, external and internal criticism.
2. Case study and action research

#### UNIT - III

1. Exploratory methods
2. Evaluation method

#### UNIT – IV

1. Ethnography and ethno methodology
2. Phenomenology

#### UNIT – V

1. Philosophical method, hermeneutics
2. Reliability and validity of qualitative research. Analysis of qualitative data. Triangulation, Meta-analysis.

#### REFERENCES:

- Best, John W. & Kahn (1995). Research in Education. New Delhi, Prentice Hall of India.
- Lyn Richards (2005). Handling Qualitative Data. Sage publications.
- Marilyn Lichtman (2006). Qualitative Research in Education. Sage publication, Mohan Cooperative Industrial Areas, Mathura Road, Post Bag 7, New Delhi-110044
- Norman Denzin (2005). The handbook of qualitative research. Sage publications.
- Neuman, W.L. & Kreuger, L.W. (2003). Social Work Research Methods: Qualitative and qualitative applications. Boston: Allyn and Bacon.
- Neuman, W.L. & Kreuger, L.W. (2003). Social Work Research Methods: Qualitative and qualitative applications. Boston: Allyn and Bacon.
- Patton, M. Q. (1990) Qualitative evaluation. and research methods. Newbury Park, CA: Sage.
- Uwe Flick (2007). An Introduction to Qualitative Research. [www.sagepublications.com](http://www.sagepublications.com)

## MODULE VI

### RESEARCH PROPOSAL

100 MARKS

1. Proposal preparation  
(50 for content, 50 for presentation)