

## PHDCW 01

### Fundamental of Educational Research

*Total: 04 Credits*

#### **Objectives:**

At the end of this course candidates should be able to:

- Explain concept of research and educational research
- Differentiate between types of research
- Use statistical tools for data analysis
- Design and conduct a research in the field of education
- Familiarize with ethical issues related to research
- Choose appropriate quantitative / qualitative tools for data collection
- Utilize and analyze data using computer software during various phases of research

#### **Unit 1: Understanding Research Methodology**

- a) Fundamentals of research
- b) Types of research: Basic, Applied, Action & Types of Educational Research
- c) Historical research, Descriptive studies and Experimental Research
- d) Qualitative Research: Types, Process, data collection and interpretation of data
- e) Research methods: Mixed Method and Multi-method Research
- f) Product development Research: Concept and steps
- g) Sampling techniques
- h) Research Data collection tools and techniques
- i) Types and sources of data

#### **Unit 2: Tools of Research**

- a) Characteristics of measuring tool: Validity, Reliability, Objectivity, Usability & Discriminating power
- b) Types of tests & inventories: Achievement test, Aptitude test, interest inventories, Personality inventories, Projective tools, Interviews, Questionnaire and attitude scales.
- c) Observation Techniques

### **Unit 3: Descriptive Data Analysis**

- a) Parametric & non – parametric data
- b) Organization of data
- c) Statistical measures: Mean, Median, Mode & Standard deviation
- d) Normal Distribution: NPC, Skewness & Kurtosis
- e) Measures of relationship: Correlation & interpretation
- f) Standard error of estimate

### **Unit 4: Inferential Data Analysis**

- a) Testing statistical significance: t test & interpreting the results
- b) Z test
- c) Analysis of variance (ANOVA)
- d) Analysis of Covariance (ANCOVA)
- e) Multivariate Analysis of Variance (MANOVA)
- f) Multivariate Analysis of Covariance (MANCOVA)
- g) Non parametric tests: Chi Square test and The Mann – Whitney Test

### **Unit 5: Technological Support for Research**

- a) Use of computers in: Various phases of research:
  - Data collection
  - Data interpretation
  - Report writing
- b) Computer Assisted Qualitative Data Analysis: Various software tools
- c) Use of SPSS software
- d) Use of web 2.0 tools for research

### **Unit 6: Basics of Report Writing**

- a) Selecting a problem and preparing a research proposal
- b) Review of related literature and recording the findings
- c) Fundamental rules and process of research report writing
- d) Evaluation of Research Report
- e) Dissemination of research outcomes
- f) **Ethical considerations in research & Plagiarism**

Principal

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