

**UNIVERSITY OF MUMBAI**



**REVISED SYLLABUS  
FOR THE  
POST GRADUATE  
CERTIFICATE COURSE  
IN RESEARCH METHODOLOGY IN  
EDUCATION**

**(with effect from the academic year 2008-2009)**

## UNIVERSITY OF MUMBAI

Ordinances, Regulations, Scheme and Syllabus for the Revised Course Certificate Course in  
Research Methodology in Education

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**Title of the Course:** Post Graduate Certificate Course in Research Methodology in Education

**Eligibility:** A candidate for being eligible for admission to the Certificate Course in Research Methodology in Education must have passed the Master's degree in any faculty (general or professional) of this university or another university recognized as equivalent thereto.

**R4848: Duration of the Course:** Six months (part-time)

**Intake Capacity:** 20 students

**Fee Structure:**

Printing and stationary:	Rs. 500/-
Development fees :	Rs. 500/-
Visiting faculty and Examination expenses:	Rs. 3000/-
University/Institutional Funds:	Rs. 1000/-

**TOTAL**                      **Rs. 5000/-**

**R4849: Teacher Qualifications:** Recognized post-graduate teachers having guided research at Master's / M.Phil. / Ph.D. level.

**R4851: Syllabus:-Scheme of papers**

Paper I	RESEARCH IN EDUCATION	100 Marks
Paper II	DATA ANALYSIS TECHNIQUES	100 Marks
Paper III	QUALITATIVE RESEARCH METHODS	100 Marks

**Scheme of Examination:** The course is of 300 marks - 100 marks each for the three papers. The practicum will be examined through internal assessment. The examination will be conducted by the University Department of Education.

**Number of Lectures:** Two lectures per paper per week.

**R4852: Standard of Passing:** To pass the examination, a candidate must obtain 40% of marks in each of the three papers under each head of passing (written as well as practical).

60% or more of total marks at one sitting: 1<sup>st</sup> Class

50% - 59% of total marks at one sitting: 2<sup>nd</sup> Class

40% - 49% total marks at one sitting: Pass Class

In case of candidate who appears for the examination and fails or does not appear in theory paper, the marks obtained in practical and in the theory will be carried over at his/her option to three subsequent exams. Such candidates will not be eligible for 1<sup>st</sup> or 2<sup>nd</sup> class.

### **Detailed Syllabus**

#### **Objectives of the Course**

- 1) To enable teachers to understand concept of research in education, its need, methodology, sampling techniques and tools and techniques.
- 2) To enable teachers to understand the qualitative and quantitative techniques of data analysis and to be able to apply it in data analysis.
- 3) To enable teachers to understand qualitative research methods in detail.

### **PAPER I**

#### **RESEARCH IN EDUCATION**

**100 Marks**

#### **1. EDUCATIONAL RESEARCH**

- a) Meaning and scope of educational research.
- b) Meaning and steps of scientific method. Aims of research as a scientific activity: Problem-solving, Theory Building and Prediction.
- c) Paradigms of educational research: Quantitative and Qualitative.
- d) Types of research: Fundamental, Applied and Action.

#### **2. THEORY BUILDING AND RESEARCH**

The role of theory in educational research. Structure of theory: theory as (i) concept (ii) conceptual scheme and (iii) communication of explanations. Meaning of laws, assumptions, facts, concepts and constructs. Generating a theory. Use of inductive and deductive reasoning research. Meaning of explanations and generalizations with reference to theory. Criteria of evaluating a theory. Types of theory. Meaning of a model. Types of models: Classificatory, Typological, Contingency, Associative and Functional models.

### **3. RESEARCH PROPOSAL**

- (a) Identification of a research topic: Sources and Need.
- (b) Review of related literature.
- (c) Rationale and need of the study.
- (d) Conceptual and operational definition of the terms.
- (e) Variables.
- (f) Research questions, aims, objectives and hypotheses.
- (g) Assumptions, if any.
- (h) Methodology, sample and tools.
- (i) Scope, limitations and delimitations.
- (j) Significance of the study.
- (k) Bibliography.
- (l) Time frame.
- (m) Budget, if any.
- (n) Chapterisation.

### **4. VARIABLES AND HYPOTHESES**

- (a) Variables:
  - Meaning of Variables
  - Types of Variables (Independent, Dependent, Extraneous, Intervening and Moderator)
- (b) Hypotheses
  - Concept of Hypothesis
  - Sources of Hypothesis
  - Types of Hypothesis (Research, Directional, Non-directional, Null)
  - Formulating Hypothesis
  - Characteristics of a good hypothesis.

### **5. RESEARCH METHODOLOGY**

- (a) Descriptive Research:
  - Casual-Comparative
  - Correlational
  - Document Analysis
- (b) Historical Research: Meaning, Scope of historical research, Uses of history, Steps of doing historical research (Defining the research problem and types of historical inquiry, searching for historical sources, Summarizing and evaluating historical sources and Presenting pertinent facts within an interpretive framework.) Types of historical sources, External and internal criticism of historical sources.

(c) Experimental Research:

- Pre-Experimental Design, Quasi-Experimental Design and True-Experimental Designs.
- Factorial Design.
- Nesting Design
- Single-subject Design.
- Internal and External Experimental Validity.
- Controlling extraneous and intervening variables.

## **6. SAMPLING**

(a) Concepts of Universe and Sample

(b) Need for Sampling

(c) Characteristics of a good Sample

(d) Determining Sample Size

(e) Techniques of Sampling

- Probability Sampling
- Non-Probability Sampling

## **7. TOOLS AND TECHNIQUES OF RESEARCH**

(a)

- Classical Test Theory: Model, Assumption, Limitations.
- Item Response Theory: Models, Parameters, Estimation, Assumption.
- Uni-dimensional Logistic Rasch Model.
- IRT with Polychotomous Responses Format

(b) Steps of preparing a research tool.

- Validity (Meaning, types, indices and factors affecting validity)
- Reliability (Meaning, types, indices and factors affecting reliability)
- Item Analysis (Discrimination Index, Difficulty Index)
- Index of Measurement Efficiency.
- Standardization of a tool.

(c) Tools of Research

- Rating Scale
- Attitude Scale
- Opinionnaire
- Questionnaire
- Aptitude Test

- Check List
- Inventory
- Semantic Differential Scale

(d) Techniques of Data Collection

- Observation
- Interview
- Projective.

(Tools to be used for collecting data using these techniques to be discussed in detail.)

## **8. RESEARCH REPORTING**

(a) Format, Style and Mechanics of Report Writing with Reference to

(i) Dissertation and Thesis and (ii) Paper.

(b) Bibliography.

(c) Evaluation of Research Report.

## **REFERENCES**

1. Best, J. W. and Khan, J. Research in Education. (7<sup>th</sup> Ed.) New Delhi: Prentice-Hall India Ltd. 1997.
2. Borg, B. L. Qualitative Research Methods. Boston: Pearson. 2004.
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19. Van de Linden, W.J. & Hambleton, R.K. (1997). Handbook of Modern Item Responses Theory. New York: Springer.

**PAPER II**  
**DATA ANALYSIS TECHNIQUES**

**100 Marks**

**1. TYPES OF DISTRIBUTION**

- (a) Discrete and Continuous distribution of data.
- (b) Normal Probability Distribution
  - Areas under the normal curve
  - Applications
- (c) Types of Measurement Scale (Nominal, Ordinal, Interval and Ratio)

**2. HYPOTHESIS TESTING**

- (a) Testing of Hypotheses
- (b) Levels of Significance
- (c) Type I and Type II Errors.
- (d) Power of a test.

**3. DESCRIPTIVE DATA ANALYSIS**

- (a) Measures of central tendency.
- (b) Variability
- (c) Measures of Divergence from Normality
  - Skewness
  - Kurtosis
- (d) Estimation of Population Parameters of Mean and SD.
- (e) Graphical Presentation of Data.

**4. PARAMETRIC TECHNIQUES**

- (a) Conditions to be satisfied for using parametric techniques
- (b) Pearson's Coefficient of Correlation
- (c) t-test for comparison of Mean Scores.
- (d) z-test for comparison of r's.
- (e) ANOVA
- (f) Hotelling's t-test
- (g) Biserial and Point-Biserial r.

**5. NON-PARAMETRIC TECHNIQUES**

- (a) Spearman's Rho
- (b) Chi-square (Equal Probability and Normal Probability Hypotheses).
- (c) Contingency Coefficient and Chi-square



- (d) Tetrachoric and Phi Coefficients
- (e) Median Test
- (f) Sign Test
- (g) Mann-Whitney U-Test

## **6. MULTIVARIATE TECHNIQUES OF DATA ANALYSIS**

- (a) Partial and Multiple Correlation, Part Correlation
- (b) Multiple Regressions
- (c) Two-way ANOVA
- (d) MANOVA
- (e) ANCOVA
- (f) Path Analysis
- (g) Factor Analysis
- (h) Canonical Correlation
- (i) Discriminant Analysis

## **7. USE OF ICT IN DATA ANALYSIS**

## **8. QUALITATIVE DATA ANALYSIS**

- (a) Data Reduction and Classification
- (b) Analytical Induction
- (c) Constant Comparison
- (d) Triangulation (Meaning, Purpose and Types)

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## PAPER III

### QUALITATIVE RESEARCH METHODS

**100 Marks**

#### SECTION I: QUALITATIVE RESEARCH METHODS

**(50 Marks)**

- 1. GROUNDED THEORY DESIGNS:** Strengths and weakness of grounded theory. Types and key characteristics of grounded theory designs. Steps in conducting a grounded theory research. Criteria for evaluating a grounded theory design.
- 2. NARRATIVE RESEARCH DESIGNS:** Meaning and key characteristics of narrative research design. Its types. Steps in conducting narrative research design. Strengths and weaknesses of narrative designs. Criteria for evaluating narrative research.
- 3. EVALUATION RESEARCH:** Meaning of evaluation research. Purpose and roles of evaluation (with reference to research). Types of evaluation. Approaches to evaluation: (a) objective-oriented (b) decision-oriented (c) consumer-oriented (d) expertise-oriented (e) adversary-oriented and (f) naturalistic and participant-oriented evaluation. Standards for judging the quality of evaluation research.
- 4. POLICY RESEARCH:** (A) Meaning of policy analysis. Characteristics of policy analysis methods: focused synthesis, secondary analysis, field experiments, quasi-experiments, large scale experimental and quasi-experimental evaluations. (B) Cost-analysis: Meaning, Modes of cost-analysis. Cost-benefit analysis, Cost-effective analysis, Cost-utility analysis and Cost-feasibility analysis.
- 5. MIXED METHOD DESIGNS:** key characteristics of mixed method designs. types of mixed method designs: (i) Triangulation, (ii) explanatory and (iii) exploratory designs. Steps in conducting a mixed method designs. Strengths and weakness of mixed method research.

#### SECTION II : PRACTICUM

**(50 Marks)**

Any two of the following:

1. A critical review of related literature in an area of educational importance.
2. Preparation of a research proposal on a topic of educational relevance.
3. Development of a tool of research.

## **REFERENCES**

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