



**Syllabus: Research Methodology  
PhD Entrance Examination  
TERI School of Advanced Studies**

**1. Introduction to Research:**

Meaning and importance of Research  
Types of Research  
Research Design and Stages  
Selection and Formulation of Research Problem, Objective(s) and Hypothesis  
Developing Research Plan – Exploration, Description, Diagnosis, Experimentation,  
Determining Experimental and Sample Design.

**2. Data Collection:**

Sources of Data – Primary and Secondary  
Types of Data – Categorical (nominal and ordinal), Numerical (discrete, continuous, ratio and interval)  
Methods of Data Collection: Survey, Interviews (in-depth or Key Informant interviews), Focus Group Discussion (FGD), Observation, Records or Experimental Observations.

**3. Data Processing and Analysis:**

Statistical Graphics – Histograms, Frequency Polygon, Ogive, Dotplots, Stemplots, Bar  
Graphs, Pareto Charts, Pie Charts, Scatterplots, Boxplots  
Descriptive Analysis – Frequency Distributions, Measures of Central Tendency, Measures of Variation/Dispersion, Skewness and Kurtosis, Measures of Relative Standing  
Qualitative Approaches Including Grounded Theory, Ethnography, Narrative Inquiry,  
Phenomenology and Case-Study.

4. **Scientific Writing:**

Structure and Components of Scientific Reports – Types of Report  
– Technical Reports and Thesis – Significance – Different steps in the preparation  
– Layout, Structure and Language of Typical Reports – Illustrations and Tables –  
Bibliography, Referencing and Foot Notes.  
Preparation of the Project Proposal – Title, Abstract, Introduction – Rationale,  
Objectives, Methodology – Time frame and Work Plan – Budget and Justification  
–References.

5. **Research Ethics:**

Research Ethics Committees/Institutional Review Board – Roles and  
Importance  
Intellectual Property rights – Commercialization, Royalty  
Reproduction of Published Material – Citation and Acknowledgement, Plagiarism