

**Pre PhD Course in Environmental Sciences**  
**Research Methodology**  
**Paper I**

- Unit I      Review of literature: Review Process and Bibliography, Locating Literature Publications (scientific database: science direct and pubmed), Publication Ethics, Research Plan and its Components, Difficulties in Environmental Research, Identification and formation of Research Problem.
- Unit II      Materials and Methods, Details required about the Materials, General Guidelines and Brief idea about Safety, Hazards and Precautions in Laboratory, Animal Handling and Ethics, Methods of Testing Hypothesis, Methods of Research (sampling, commonly used techniques like chromatography, spectroscopy, centrifugation etc.)
- Unit III     Writing results of Research Proposal, Report and Research Paper: Voice, Tense and Style, Sequence, Structure, Content and Data Analysis, Preparation of Tables, Introduction and Placement of Table, Table Format, Preparation of Figures, Types and Selection of Figures, Placement of Figures, Numbering and Caption of Tables and Figures, Preparation of Statistical Diagrams, Preparation of Photographs and Micrographs.
- Unit IV     Writing Abstract, Summary, Synopsis and Discussion: Abstract and Keywords, Summary, Synopsis of Research Plan, Paper and Thesis, Style and Sequence of Discussion, Structure and Content of Discussion, Format of Discussion.
- Unit V      Preparing for Oral Presentation: Preparation of Script, Presentation using Audio Visual Aid, Ethical, Legal and Social Issues in Research, A Brief idea about Funding Agencies (DST, DBT, CSIR, UGC), Role of IPR in Research and development.

**Books Recommended:**

1. Research Methodology- G. R. Basotia and K. K. Sharma
2. Research Methodology- C. H. Chaudhary, RBSA Publication