

Maulana Azad National Urdu University

PhD (Mathematics) E.T.

Syllabus –Research Methodology

1. Foundations of Research: Empiricism, deductive and inductive theory. Basic characteristics of scientific method – Research Process.
2. Fundamental concepts of identification & formulation of research problem– Research Question – Hypothesis – Qualities of a good Hypothesis –Null Hypothesis & Alternative Hypothesis. Hypothesis Testing.
3. Research Design: Concept and Importance in Research – Features of a good research design – Concept of Independent & Dependent variables. Qualitative and Quantitative Research. Ethical issues related to publishing, Plagiarism
5. Basic data analysis: Data Preparation – Univariate analysis (frequency tables, bar charts, pie charts, percentages) –Chi-square test including testing hypothesis of association. Fundamentals of Sampling: Concepts of Statistical Population, Sample, Sampling Frame, Sampling Error, Sample Size, Non Response. Probability Sample – Simple Random Sample, Systematic Sample, Stratified Random Sample.