

National Institute of Advanced Manufacturing Technology (NIAMT), Ranchi, Jharkhand

Syllabus: Research Methodology PhD
Entrance Examination

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, Dot plots, 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

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