



ANDHRA UNIVERSITY

TRANS-DISCIPLINARY RESEARCH HUB

RESEARCH METHODOLOGY SYLLABUS FOR SCIENCE

Unit-1: Research Methods: Definition, Approaches and Types of Research . Research proposals and aspects, Criteria of good research, Research formulation and hypothesis, Use of Information Technology and Paradigm Shifts in Research .Use of electronic tools for bibliographic formatting and checking plagiarism.

Unit-II: Research Design and Data Collection: Principles of Research Design; Types and Stages of Research Design; Sampling Design; Data Collection: Construction of Questionnaire, Schedule and Interview, Conducting Interview and Survey

Unit-III: Data Management Field Survey and Observation: Data Processing: Tabulation, Diagrammatic Representation and Analysis; Reliability and Validity of Data; Concept and Types of Field Survey; Concept and Types of Observation. Use of bar diagram, histogram, scatter plots, etc. Graphical tools in excel for presentation of data.

Unit-IV: Difference between parametric and non-parametric statistics; confidence interval; errors; levels of significance; regression and correlation; t-test (paired and unpaired); analysis of variance; chi square test. Research Writing Structure and Components of Scientific Reports; Writing of Research Proposal, Thesis, Research Paper; References and Bibliography.

References:

1. Ahuja, R. (2001). Research Methods. Jaipur: Rawat Publications.
2. Bhattacharyya, D. K. (2005). Research Methodology. New Delhi: Excel Books.
3. Blaxter, L., Hughes, C. and Tight, M. (1996). How to Research. Buckingham: Open University Press.
4. Creswell, J.W. and Creswell, J.D. (2017). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. London: Sage Publications.
5. Flick, U. (2020). Introducing Research Methodology: Thinking Your Way through Your Research Project. 3rd Ed. London: Sage Publications
6. Research Methodology: A Step-by-Step Guide for Beginners (2005) 2nd edi., Kumar R. Pearson Education. ISBN:978-1446269978.



ANDHRA UNIVERSITY TRANS-DISCIPLINARY RESEARCH HUB

MODEL QUESTIONS

1. How have paradigm shifts in research, especially with the advent of information technology, influenced the formulation and execution of research projects?
2. Discuss the importance of sampling design in research and explain how it impacts the reliability and validity of research findings.
3. Explain the concept of reliability and validity of data in research. How can researchers ensure that the data collected is reliable and valid?
4. Compare and contrast parametric and non-parametric statistics, highlighting their respective strengths and limitations in different research scenarios.