



KISHKINDA UNIVERSITY

Established under the act No. 20 of 2023,
Recognized by Govt. of Karnataka & UGC New Delhi

Department of Physics PhD Course Work Syllabus

Research Methodology

Course Title:	Research Methodology	Credits:	04
Course Code:	24REM01	SEE Marks:	100
Course Type:	Self-Study	Exam Duration:	03

Module-1 Introduction to Research:

Definition of Research, Types & Methods of research, Applied versus Fundamental research, Exploratory research, Observational research, Inductive and Deductive approaches. Literature search strategy, Sources of information, Identification of Research problem, Research gap, Research Hypothesis, Study Objectives. Data and types: Types of Data, Primary and Secondary data, Scales of measurement of data- Nominal data, Ordinal, Interval and Ratio scale, Variables and Confounders, Dependent and Independent Variables, Extraneous variable, Control variable.

Module-2 Qualitative research methods:

Approaches, main qualitative methods (unstructured observation, structured observation, unstructured and semi-structured interviewing, systematic interviewing, multiple informant interviewing), Ethnography, Grounded Theory, Participant Observation, Representativeness, reliability and validity Coding, Content analysis, Pattern thematic analysis, Qualitative methods for community health need assessment - Community health needs assessment in the context of population-based methods, Management and analysis of qualitative data, Computer-assisted qualitative data analysis, Limitation of Qualitative research.

Module-3 Sampling and survey techniques:

Importance and principles of sampling, Concept of Population and Sample, Sampling in Qualitative and Quantitative research. Random/ Probability Sampling and Non-Random / Sampling, Types of Random Sampling (Systematic, Stratified, Multiphasic, Multistage) Cluster Sampling, Quota Sampling, Snowball Sampling, Purposive sampling. Survey techniques & tools, Design of survey and data collection instruments – relevance to study objectives; development and types of questions; length order, layout and coding of survey instrument. Questionnaire (Meaning of Questionnaire, Details & Clarity of Questions, Logical Sequence of Questions), Observations (Meaning and Characteristics of Observation, Types of Observation, Merits & Demerits), Interviews, Focus Group Discussion.

Module-4 Data Collection and statistical Methods:

Data Quality and management: Data quality assessment, Data triangulation, Double method of data collection and management, Data base manipulations, Managing entries of missing

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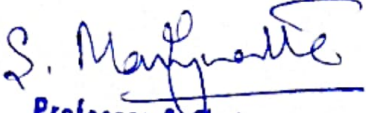
data, Use of computers in data management and analysis. Descriptive statistics, Measures of central tendency, Tabular and Graphical presentation of data, Charts, Graphs-Bar, Pie, Scatter, Histogram, Line diagram, Measures of dispersion- Range, Standard Deviation, Variance. Normal curve, Skewed distribution of data

Module-5 Ethics in research and scientific writing

Importance of ethics in research, Principles of ethics, Animal ethics committee – approval, Good clinical practice (GCP), Research ethics, Plagiarism, Guidelines for the plagiarism check. Scientific writing: Project Report / Thesis /Dissertation writing, Components of project report, Budget, Source of Funding, Citation, referencing and bibliography, Reference Management, Writing a Research Paper, Publication of article in indexed scientific journal.

References:

1. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, by John W. Creswell
2. Qualitative Data Analysis: An Expanded Sourcebook, by Matthew B. Miles.
3. Research Methodology: A Guide for Researchers in Management and Social Sciences Paperback – 2006 , by Taylor & Bill .
4. R. Bonita, R. Beaglehole, T. Kjellström. Basic Epidemiology, 2nd edition World Health Organization. 2006
5. The Craft of Research, by Wayne C. Booth, Joseph Williams, and Gregory G. Colomb, 4th Edition, 2016.
6. Research Methodology Methods & Techniques by C R Kothari and Gaurav Garg, New Age International Publishers, 2023.
7. Research Methodology: A Step-by-Step Guide for Beginners by Ranjith Kumar, 2010, 3rd Edition. SAGE Publications Ltd.
8. Research Methodology: Methods And Techniques by Dr. R.K Jain, 2021, 5th Edition, Vayu Education of India.


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