



Faculty of Rehabilitation and Behavioral Sciences

Research Methodology - Syllabus

The objective of this course is to develop critical core competencies and skills required to carry out research. These competencies and skills include: defining research questions; setting appropriate research objectives; study design that incorporates research objectives and budgetary constraints; secondary and primary data collection and instruments; sampling and analysis methods; and effective reporting of results; as well as the importance of ethical conduct in conducting research

At the end of the course, students will be able to...

- Develop the ability to apply the research methodology while working on a research study
- Describe the appropriate statistical methods required for a particular research design
- Choose the appropriate research design and develop an appropriate research hypothesis for a research study
- Develop an appropriate framework for research studies
- Understand the ethics and principles of the research and its publication



Part-A

UNIT I: OBJECTIVES AND TYPES OF RESEARCH

Definition of Research – Importance, objectives, limitations, Characteristics of good research, Types of research, Defining and formulating the research problem, selecting the problem, the necessity of defining the problem, the importance of literature review in defining a problem, literature-primary and secondary sources, reviews, monograph, patents, research databases, web as a source, searching the web, critical literature review, identifying gap areas from literature and research database, development of a working hypothesis.

UNIT II: APPLICATIONS OF SAMPLING AND METHODS OF DATA COLLECTION

- (a) Sampling in quantitative, qualitative, and mixed research; Probability and non-probability sampling
- (b) Methods of data collection — identifying a tool using reliable and valid information; construction and use of tests, inventories, scales, checklist, and questionnaire; relevance and guidelines for conducting the interview, and observation focus group discussion, time sampling, field notes, the role of researcher in observation; collection of secondary (existing) data.

UNIT 3: METHODS OF RESEARCH

Research methods: Terms, concepts, and their application

(I) Quantitative Methods:

Experimental Method/Research — Manipulation/content of variables; Research strategies Experimental (bivalent, multivalent, and parametric), Descriptive (comparative, developmental, correlational and survey). Research designs- within groups, between groups, and mixed types.

Non-experimental/descriptive method/research survey, causal, comparative, and correlational; predictive and exploratory, cross-sectional, longitudinal (trend and panel studies).



(II) Qualitative Methods.

- Case study, phenomenology, ethnography, grounded theory- characteristics, types, data collection, analysis, and report writing.
- Mixed research—principles, strengths, and weaknesses.

UNIT 4: APPLICATIONS OF STATISTICS AND REPORT WRITING

- A. Types of data analysis, Selection of appropriate statistics based on various parameters such as research strategies and design, sample size, type of data, objectives, etc., Analysis the descriptive and inferential statistics, Analysis in qualitative and mixed research — path analysis, field notes, content analysis, error analysis, mnemonics, analysis of visual and audio data, coding, constructing diagrams, Statistical Analyses on different soft wares (Examples: SPSS package, Microsoft Excel., Stata, etc.).
- B. Components of research articles and theses: overview (Introduction, Review of literature, Method, Results and Discussion), Differences in the styles of writing: abstracts/executive summary, research paper/article, synopsis, doctoral thesis, etc. Vocabulary/syntax considerations while writing scientific reports, Representation of the data in tabular and graphical form.

Part B

UNIT – V RESEARCH AND PUBLICATION ETHICS (THEORY) (15 HOURS)

(A) PHILOSOPHY AND ETHICS (3 hours.)

1. Introduction to philosophy: definition, nature and scope, concept, branches
2. Ethics: definition, moral philosophy, nature of moral judgments and reactions

(B) SCIENTIFIC CONDUCT (5 hours.)

1. Ethics concerning science and research
2. Intellectual honesty and research integrity,
3. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP)
4. Redundant



publications: duplicate and overlapping publications, salami slicing 5. Selective reporting and misrepresentation of data

(C) PUBLICATION ETHICS (7 hours.)

1. Publication ethics: definition, introduction, and importance 2. Best practices/standards setting initiatives and guidelines: COPE, WAME, etc., 3. Conflicts of interest 4. Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types 5. Violation of publication ethics, authorship, and contributor ship, 6. Identification of publication misconduct, complaints, and appeals 7. Predatory publishers and journals

RESEARCH AND PUBLICATION ETHICS (PRACTICE)(15 HOURS)(INTERNAL)

OPEN ACCESS PUBLISHING:(4 Hours)

1. Open access publications and initiatives 2. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies 3. A software tool to identify predatory publications developed by SPPU 4. Journal finder/journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggested, etc.

PUBLICATION MISCONDUCT: (4 Hours)

(A) Group Discussions: 1. Subject-specific ethical issues, Fabrication, Falsification, and Plagiarism (FFP), authorship 2. Conflicts of interest, 3. Complaints and appeals: examples and fraud from India and abroad

(B) Software tools: Use of plagiarism software like Turnitin, Urkund, and other open-source software tools,

DATABASES AND RESEARCH METRICS: (7 Hours)

(A) Databases: 1. Indexing databases 2. Citation databases: Web of Science, Scopus, etc.

(B) Research Metrics: 1. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score 2. Metrics: h-index, g index, i10 index, altmetrics.



References

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- Hatala, M. (2019). APA Style Basics: Writing Student Papers in Psychology and the Social Sciences [Print Replica] Kindle Edition
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- Mligo,E.S.(2016). Introduction to Research Methods and Report Writing: a Practical Guide for Students and Researchers in Social Sciences and the Humanities.Wipf and Stock Publishers, Eugene
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