



CLUSTER UNIVERSITY OF SRINAGAR

Syllabus for PG Information Technology

Batch 2023

Course Code:
Credits: 4 (L- 3, T- 1, P-0)
Contact Hrs: 75 (Theory: 45, Tutorial: 15)

3rd SEMESTER: M.Sc. (IT) Batch 2023 & Onwards
Title: Research Methodology [Core 1] Max. Marks: 100
Theory External: 60; Min Marks: 24
Theory Internal (Continuous Assessment):
15 Marks, Min Marks: 06
Practical Experimental Basis= 15, Min. Marks: 06
Practical Experimental (Continuous assessment) =
10 Marks, Min. Marks: 04

Objective

The objective is to equip students with comprehensive knowledge and skills in research methodology, including problem formulation, literature review, research design, data analysis, and effective communication of research findings, with an emphasis on ethical considerations in research.

Course Outcomes:

After completing this course, students should be able to:

- Understand the fundamental concepts of research and the research process.
- Develop skills in research design, including both qualitative and quantitative methods.
- Critically evaluate research literature and identify gaps in the current knowledge.
- Formulate research questions and hypotheses.
- Apply appropriate research methodologies and data analysis techniques.
- Communicate research findings effectively in written and oral formats.

Syllabus:

Unit I: Introduction to Research Methodology

- Definition and Objectives of Research, Types of Research (Descriptive, Analytical, Applied, Fundamental, Quantitative, Qualitative, Conceptual, Empirical), Research Approaches (Qualitative vs. Quantitative), Significance of Research in Information Technology, Ethical Issues in Research

Unit II: Research Problem Formulation and Literature Review

- Identifying and Defining Research Problems, Reviewing the Literature, Sources of Literature, Writing a Literature Review, Gap Identification and Research Questions.
- Research Design: Definition, Need, and Features, Different Research Designs: Exploratory, Descriptive, Experimental and Sampling Design: Steps, Types, Techniques, Data Collection Methods: Primary and Secondary Data, Measurement and Scaling Techniques

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Unit III: Data Analysis and Interpretation

- Data Preparation: Editing, Coding, and Data Entry, Descriptive Statistics: Measures of Central Tendency, Dispersion, Skewness, Inferential Statistics: Hypothesis Testing, t-test, Chi-square test, ANOVA, Correlation and Regression Analysis, Using Software Tools for Data Analysis (e.g., SPSS, R, Python)

Unit IV: Writing and Presenting Research

- Structuring the Research Report: Introduction, Literature Review, Methodology, Results, Discussion, Conclusion, Referencing Styles (APA, MLA, IEEE), Plagiarism and How to Avoid It, Preparing for Oral Presentations, Effective Communication of Research Findings

Books Recommended:

- **Research Methodology: Methods and Techniques** by C.R. Kothari
- **Research Methods for Computer Science and Information Systems** by L. Bickman and D.J. Rog
- **The Craft of Research** by Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams
- **Practical Research: Planning and Design** by Paul D. Leedy and Jeanne Ellis Ormrod
- **Research Methods in Information** by Alison Jane Pickard
- **Conducting Research Literature Reviews: From the Internet to Paper** by Arlene Fink

