Course: RM
Research Methodology

Semester: I	Credits: 4	Subject Code: SRMRM123558	Lectures: 60

Course Outcomes:

At the end of the course, the learner will be able to:
- CO1- Understand basic concepts in research methodology in Computer science.
- CO2- Select an appropriate research design.
- CO3- Learn probability and apply it for real life problems in Computer Science.
- CO4- Understand the basis of descriptive statistics measures and hypotheses.
- CO5- Select the right statistical technique to be used with the research method
- CO6- Take up and implement a research project/ study. Collect the data, edit it properly and analyse it accordingly. Interpret the results obtained on the basis of statistics with respect to the claims made. Write a report for the same.

Unit 1: Basics in Research Methodology	15

- Research: meaning and significance,
- Objectives of Research
- Types of Research
- Research approaches
- Significance of research
- Research process
- Criteria of good research
- Defining the research problem

Unit 2: Research Design	15

- Meaning of research design
- Features of good design
- Types of Research designs
- Preparing research proposals: Selection of the topic, Review of literature, Identifying Objectives of the Study, preparing Research Questions,
- Concepts of Hypothesis and Importance.

Unit 3: Data Collection, processing and Analysis of data	15

- Sources and types of Data and its measurement Primary and Secondary
- Methods of collecting data: Observation, Questionnaire, Interview, Focus groups and Case study method
- Types of Sampling: Random sampling, Systematic sampling and Stratified sampling
- Survey Research: Role of library and Internet
- Meaning and Definition of Data Analysis
- Measures of Central Tendency, measures of dispersion, correlation, regression

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- Testing of hypotheses One sample hypothesis testing, Chi-Square Test, t-test. Computer Applications in Research.
- Computer Applications in Research

Unit 4: Research Report	15

- Meanings and Objective of Research Report
- Concepts Of Case Study
- Characteristics of Good Research Report Writing
- Objective of Research Report
- Types of Research Report
- Concepts of: Appendices, Review of Literature, Bibliography And References, Recommendation, Hypothesis Testing, Index
- Activity: Implement the knowledge by taking up the project and writing the report.

Recommended Text Books:

- Ayden Melton May 12, 2022: *Research Methodology for Computer Science: Computing and classification of sciences*: Independently published by Ayden Melton.
- C. R Kothari (2004): *Research Methodology: Methods and Techniques*. New Delhi: New Age International.
- John W Cresswell & J David Cresswell (2017): *Research Design*, New Delhi: Sage.
- Philipp Winter March 5, 2023: *Research Power Tools: Guidelines and Tools for Productive Computer Science Research:* Philipp Winter
- S P Gupta (2012): *Statistical Methods*, New Delhi: Sultan Chand & Sons.
- Zina O'Leary (2010): *The Essential Guide to Doing Your Research Project*, New Delhi: Sage.
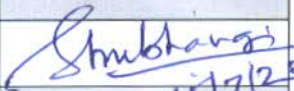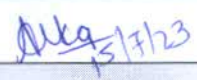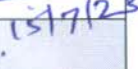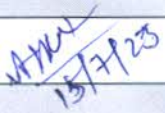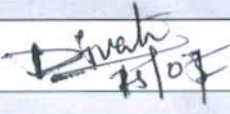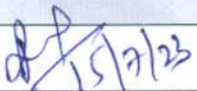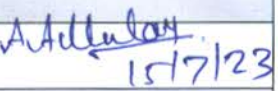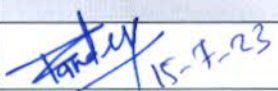
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- C. R Kothari (2004): *Research Methodology: Methods and Techniques*. New Delhi: New Age International.
- John W Cresswell & J David Cresswell (2017): *Research Design,* New Delhi: Sage.
- S P Gupta (2012): *Statistical Methods,* New Delhi: Sultan Chand & Sons.
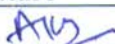- Zina O'Leary (2010): *The Essential Guide to Doing Your Research Project*, New Delhi: Sage.

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