

RESEARCH METHODOLOGY

Unit - I

Introduction to Research: Definitions, characteristics and significance of research; Types of research; Needs for Research; Needs for design of experiment.

Research Process: Objectives of Research process; Research design: Exploratory, Descriptive, Experimental and Observational.

Unit - II

Sampling: Sampling fundamentals, Sample design, Methods of drawing samples, Lottery method and using random number table. Concept of different sampling methods.

Work Plan: Summary of the major components of a research proposal; Fieldwork, Formation of Hypothesis: Null hypothesis, Alternative hypothesis.

Unit – III

Measurement: Design of Questionnaire; Identification of Research problem, Measurement of problem and scaling techniques.

Data Collection: Various sources of data collection, Primary data, Secondary data, data processing.

Unit - IV

Probability: Definition of probability, Sampling distribution , Binomial distribution, Normal distribution, Poisson's distribution.

Data analysis and Statistics: Hypothesis testing, Type I and Type II error, standard error, Factor Analysis (concept only); Correlation & regression analysis. ANOVA, t-test, z-test, Chisquare test of (i) Variance of a normal population (ii) Goodness of fit. Non-parametric tests, sign test, run test.

Unit – V

Report writing and Presentation: Types and Structure of research report, ethical issues in research, presentation of report.

Computer Applications: Data storing, features for statistical data analysis, generating charts/graphs & other features. [*Tools: Microsoft Excel, Open office and similar or other advanced tools*], Thesis writing & Scientific editing tools.

References:

1. Montgomery, Douglas C. (2007) 5/e, Design and Analysis of Experiments (Wiley India)
2. Montgomery, Douglas C. & Runger, George C. (2007) 3/e, Applied Statistics & probability for Engineers (Wiley India)
3. Kothari C.K. (2004) 2/e, Research Methodology – Methods and Techniques (New Age International, New Delhi)
4. Krishnswamy, K.N., Shivkumar, Appa Iyer and Mathiranjana M. (2006) Management Research Methodology; Integration of Principles, Methods and Techniques (Pearson Education, New Delhi)
5. The Complete reference Office Xp- Stephan L. Nelson, Gujulia Kelly (TMH)
6. Biostatistics by Alvin E.Lewis.
7. Introduction to probability & Statistics by Henry L.Alder & Edward B. Roessler.
8. Basic Computer Science and Communication Engineering – R. Rajaram (SCITECH).