

RIMT UNIVERSITY
Course: M. Phil/ Ph. D Program

RESEARCH METHODOLOGY & STATISTICAL TECHNIQUES

(Other than Languages and Non Statistics)

Code: RM 5011

Time: 3 Hours

Max Marks: 100

Internal: 40

External: 60

Course Objectives

- a) To familiarize participants with basics of research and the research process.
- b) To enable the participants in conducting research work and formulating research synopsis and report.
- c) To impart knowledge for enabling students to develop data analytics skills and meaningful interpretation of the data sets so as to solve the business/Research problem.

Learning Outcomes of the Course

The aim of the course is to provide participants with an introduction to research methods and report writing. Upon successful completion of the course, the students will be able to:

- a) Develop an understanding about various kinds of research, objectives of doing research, research process, research design and sampling.
- b) Have a basic knowledge on qualitative research techniques.
- c) Acquire an adequate knowledge on measurement and scaling techniques as well as the quantitative data analysis.
- d) Get a basic awareness of data analysis-and hypothesis testing procedures.

Unit-I

Introduction to Research Methodology: Meaning, nature and scope; types of research, and research process. **Problem Definition:** Research problem; necessity of defining the problem; techniques involved in defining a problem; review of literature and identification of research gaps.

Research Design: Meaning of research design; need for research design; features of a good design; important concepts relating to research design; and different research designs.

Sampling Design: Census and sample survey; steps in sampling design; criteria of selecting a sampling; characteristics of a good sample design; different types of sample designs; and random sampling design.

Unit-II

Measurement and Scaling Techniques: Sources of error in measurement; tests of sound measurement; and important scaling techniques.



Data Collection: Collection of primary data; observation method; interview method; collection of data through questionnaires; collection of data through schedules; latest advances in methods of data collection; collection of secondary data; the case study method.

Data Analysis-I: *Descriptive Statistics Analysis* covering measures of central tendency, dispersion and asymmetry; measures of relationship using regression, correlation and association (in case of attributes). *Inference Statistics Analysis* covering sampling theory, concept of standard error and problem of estimation of a sample size.

Unit-III

Data Analysis-II: Testing of hypotheses covering basic concepts, procedure for hypothesis testing, tests of hypotheses, tests of significance for large samples and small samples, student's t-distribution, properties, and t-distributions and the t-levels applications of the t-distribution, chi-square test and goodness of fit, F-test and Z test, analysis of variance, non-parametric test, The Mann - Whitney test, Krushal-Wallis test. *Multivariate Regression Analysis:* econometric model formulation, estimation, testing and interpretation.

Unit-IV

Research Tools (Computer Applications): *MS-Excel*, covering broad structure, features, data /file handling, formulae /functions and brief review of utilities of the package. *Statistical/Econometric Package* covering structure of package, data and file handling utilities and analysis utilities of the package.

Interpretation and Report Writing: Technique of Interpretation: Different Steps in Writing Report.

Recommended books:

1. Kothari, C.R., *Research Methodology: Methods and Techniques*, New Age International Publishers, New Delhi, 2010.
2. Garrett Henery E., *Statistics in Psychology and Education*, Longmans, Green, And Co., 1958.
3. Fisher, R.A., *Statistical Methods for Research Workers*, Springer-Verlag New York, Inc. 1992.
4. Gupta, S.P., *Statistical Methods*, Sultan Chand & Sons, New Delhi, 2019.
5. Allen, R.G.D., *Statistics for Economists*. London (Hutchinson), 1949.
6. Blair, Morris M. *Elementary Statistics*, Henry Holt and Co., 1944
7. Smith and Smith, *Business and Economic Statistics*, South Western publishing co., 1996.

