

**MB-207**  
**RESEARCH METHODOLOGY**

**(3 CREDITS)**

**Objective**

The objectives of the course is to enable the students in developing the most appropriate methodology for their research studies and make them familiar with the art of using different research methods and techniques.

Unit-1 Introduction to Research- Nature, Objectives, Types, Characteristics, Problems, Techniques and defining the problem.

Unit-2 Research design- Meaning, Purpose, Principles and developing a research plan.

Unit-3 Sampling design, Measurement and Scaling techniques and psychological testing.

Unit-4 Data collection- Preparation of data collection instruments, Interviews, Observation, Participatory Learning Appraisal and problems in collection of data.

Unit-5 Data analysis: Analysis of variance, Discriminant analysis, Factor analysis, Cluster analysis, Conjoint analysis, Excel and Statistical Package for Social Sciences (SPSS).

Unit-6 Report writing: Interpretations, Inferences, Generalizations and characteristics of good report.

**References**

1. Donald R. Cooper & Pamela S. Schindler (1999) Business Research Methods. New Delhi: Tata Mc Graw Hill
2. Krishna Swamy and Ranganatham (2005) Methodology of Research in Social Sciences. Mumbai: Himalaya Books
3. Levin, R. I. and Rubin, D. S. (2001) Statistics for Management. New Delhi: PHI
4. Verenson, M. L. and Levine, V. N. (1996) Basic Business Statistics. New Jersey: Prentice Hall
5. Berry, W. D. (1985) Multiple Regression in Practice. Beverly Hills: Sage

## **MB-106**

### **QUANTITATIVE METHODS**

**(3 CREDITS)**

#### **Objective**

This course helps students to understand and formulate managerial situations in a decision theoretic framework. They shall be exposed to fundamental optimization procedures and techniques. Real life case studies are discussed to illustrate constrained and unconstrained optimization methods.

Unit–1 Introduction: History; Subdivisions within Statistics; Data collection; Editing; Classification; Tabulation; Diagrammatic and Graphic representation of data.

Unit–2 Measures of Central tendency and Dispersion: Arithmetic Mean; Geometric Mean; Harmonic Mean; Median; Mode, Standard Deviation; Skew ness; Kurtosis; Moments.

Unit–3 Probability and Probability Distributions: Introduction to Probability: Probability Rules; Probabilities under Conditions of Statistical Independence; Probabilities under Conditions of Statistical Dependence, Revising Prior Estimates of Probabilities: Bayes' Theorem; Random Variables; Use of Expected Value in Decision Making; The Binomial Distribution; The Poisson Distribution; The Normal Distribution.

Unit–4 Correlation, Regression and Time Series: Estimation Using the Regression Line; Correlation Analysis; Making Inferences about Population Parameters; Using Regression and Correlation Analysis: Multiple Regression and Correlation Analysis; Finding the Multiple-Regression Equation; Variations in Time Series; Trend Analysis; Cyclical Variation; Seasonal Variation; Irregular Variation; A Problem Involving All Four Components of a Time Series; Time Series Analysis in Forecasting

Unit–5 Index Numbers: Unweighted Aggregates Index; Weighted Aggregates Index; Average of Relatives Methods; Quantity and Value Indices; Issues in Constructing and Using Index Numbers

Unit–6 Concepts of Sampling and Estimation: Random Sampling; Design of Experiments, Introduction to Sampling Distributions; Sampling Distributions in More Details; An Operational Consideration in Sampling: The Relationship Between Sample Size and Standard Error; Point Estimates; Interval Estimates: Basic Concepts; Interval Estimates and Confidence Intervals; Calculating Interval Estimates of the Mean from Large Samples; Calculating Interval Estimates of the Proportion from Large Samples.

Unit–7 Testing of Hypotheses and Analysis of Variance: Concepts Basic to the Hypothesis-Testing Procedure; Testing Hypotheses; Hypothesis Testing of Means When the Population Standard

Deviation is Known; Measuring the Power of a Hypothesis Test; Hypothesis Testing of Proportions: Large Samples; Hypothesis Testing of Means When the Population Standard Deviation Is Not Known; Hypothesis Testing for Differences between Means and Proportions; Tests for Differences between Means: Large Sample Size, Small Sample Sizes; Testing Differences between Means with Dependent Samples; Test for Differences between Proportions: Large Sample Sizes; Analysis of Variance; Inferences about a Population Variance; Inferences about Two Population Variances

Unit–8 Non-parametric tests: Chi-Square as a Test of Independence; Chi-Square as a Test of Goodness of Fit: The Sign Test for Paired Data; Rank Sum Tests: The Mann-Whitney  $U$  Test and the Kruskal-Wallis Test; The One-Sample Runs Test; Rank Correlation; The Kolmogorov-Smirnov Test.

### **Suggested Readings**

1. Richard I. Levin & David S. Rubin, Statistics for Management, PHI. 1999, New Delhi
2. Kishor S. Trivedi, Probability and Statistics with Reliability, Queuing and Computer Science Applications, John Wiley & Sons, Singapore, 2002
3. John E. Freund & Ronald E. Walpole, Mathematical statistics, PH, New Jersey, 1980
4. E.L. Lehmann, Testing Statistical Hypotheses, John Wiley & Sons, New York, 1986

S.P. Gupta, Statistical Methods, Sultan Chand & Sons, New Delhi 1998.