

Course Type	Course Code	Name of Course	L	T	P	Credit
Core	MSC 502	Research Methodology and Statistics	3	0	0	9

Course Objective

This course is expected to provide the student with the fundamentals of Business research designs and data analysis methods that are related to the management and provide a basis for later topics that utilize these statistical concepts.

Learning Outcomes

To understand the basic concepts of Research design, Sampling design, statistical methods and their application to a business or an industrial engineering problem. Moreover, students are supposed to learn some application software like MS Excel, SYSTAT, SPSS for data analysis.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Introduction to business research: Research in business; Research process; Defining the research problem and developing an approach. The designs of business research: Classification of designs; Exploratory studies- Secondary data analysis, Qualitative techniques; Descriptive studies- Surveys and observations; Causal studies- Experimental research designs.	5	Understand the concept of research design.
2	The sources and collection of data: Measurement concept; Measurement scales; Questionnaire and instruments; Sampling design.	5	Understand the concept of type of data and data collection methods.
3	Analysis and presentation of data: Data preparation, Examination of data. Report preparation and presentation.	4	Understand the concept of writing research reports.
4	The meaning and scope of statistics, some uses of statistical methods, statistical data Presentation of statistical data: tables, graphs and charts. Summarization of statistical data: Frequency distribution of observations, measures of central tendency, dispersion, skewness and kurtosis of distributions.	5	Understand the concept characterization of a data set using empirical distribution
5	Probability Distributions: Concepts, random variables; Probability Distributions: Binomial, Poisson, Normal distribution	5	Understand the concept of theoretical probability distributions
6	Statistical Estimation: Sampling distributions; Estimation: Point and Interval Estimates of mean and proportion.	5	To get familiar with statistical estimation
7	Hypothesis Testing: Testing hypotheses of mean and proportion: one/two-sample tests ; chi-square test; Analysis of variance (ANOVA)	5	Understand the concept of hypothesis and the methods to test it.
8	Correlation and Linear Regression: Simple regression and correlation: Making inferences about population parameters	5	To get familiar with studying relationship between two variables.
TOTAL		39	

Text Books:

1. *Business research Methods* (12e Edition), Cooper, Schindler and Sharma (2019), , Mc Graw Hill Education.
2. *Statistics for Management*, 7th edition, Levin & Rubin, Pearson Education Publication.

Reference Books:

1. *Applied Statistics and Probability for Engineers*, 6th edition, D. C. Montgomery and G. C. Runger, John Wiley & Sons.
2. *Marketing Research: An applied orientation* (7th Edition), Malhotra and Dash, (2015), Pearson Pub.