

# **STATISTICS FOR MANAGERS**

**[STAT1511] [LTP: 3 0 0]**

## **COURSE OBJECTIVE:**

The students could apply statistical techniques to data sets and correctly interpret the results in business and social settings.

## **UNIT I INTRODUCTION (9)**

Basic definitions and rules for probability, conditional probability independence of events, Bayes' theorem, and random variables, Probability distributions: Binomial, Poisson, Uniform and Normal distributions.

## **UNIT II SAMPLING DISTRIBUTION AND ESTIMATION (9)**

Introduction to sampling distributions, sampling distribution of mean and proportion, application of central limit theorem, sampling techniques. Estimation: Point and Interval estimates for population mean and proportion of large sample and small samples, independent and dependent samples - Point and Interval estimates for difference in two population means for large samples and small samples : assuming population standard deviation to be equal and unequal; determining the sample size.

## **UNIT III TESTING OF HYPOTHESIS - PARAMETIRC TESTS (9)**

Hypothesis testing: one sample and two sample tests for means and proportions of large samples (z-test), one sample and two sample tests for means of small samples (t-test), difference in two population means for large samples (z test) and small samples :assuming population standard deviation to be equal and unequal (t test) – Paired t test– F-test for two sample standard deviations. ANOVA- one and two way.

## **UNIT IV NON-PARAMETRIC TESTS (9)**

Chi-square test for single sample standard deviation. Chi-square tests for independence and homogeneity of attributes and goodness of fit. Kolmogorov-Smirnov – test for goodness of fit. Sign test for paired data, preferences and median- One sample run test - Mann – Whitney U test and Kruskal Wallis test.

## **UNIT V CORRELATION AND REGRESSION (9)**

Correlation – Coefficient of Determination – Rank Correlation – Regression – Types of regression - Estimation of Regression line – Method of Least Squares – Standard Error of estimate.

**TOTAL: 45 PERIODS**

**OUTCOMES:**

CO1: To understand, develop and apply the problem solving techniques to calculate probabilities.

CO2: To understand and apply estimation procedures on various scenarios.

CO3: To formulate, analyze and test hypotheses on various scenarios.

CO4: To apply non parametric tests for hypotheses testing.

CO5: To evaluate the relationship between variables.

**REFERENCES:**

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2. Prem. S. Mann, Introductory Statistics, Wiley Publications, 9th Edition, 2018.
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4. Ken Black, Sanjeet Singh, Business Statistics, 7th Edition, An Indian Adaptation, 10th Edition, Wiley India Edition, 2022.
5. Peter Bruce, Andrew Bruce, Peter Gedeck, Statistics for Data Scientists, O'Reilly, 2<sup>nd</sup> Edition, 2020.
6. Mehmet Mehmetoglu and Matthias Mittner, Applied Statistics using R, Sage Publishing, 2022.