Name of the Subject: **QUANTITATIVE TECHNIQUES FOR MANAGERS**
Course Code and Subject Code: **CC 106, QTM**
Course Credit: **FULL (50 SESSIONS OF 60 MINUTES EACH)**

Course Description

Statistics is used to make inferences related to situations. Various Statistical methods can be applied to different situations to arrive at meaningful results. This subject aims to familiarize students towards perceiving and analyzing modern business & economic numerical and apply statistical techniques for arriving at sound management decisions. On completion of this course, students would be able to acquire an understanding of descriptive statistical tools like measures of central tendency & measures of variation and apply these tools to real life situations. Course helps in identifying and establishing relationships between real life variables using tools like correlation and regression and comprehend the concepts of probability & probability distributions. Course also discusses the concept of sampling & sampling distributions and enables identifying application of sampling methods for real life situations. The Course also helps in developing hypothesis for different situations & makes use of tools like Chi-square test and ANOVA at primary level.

Evaluation pattern:

Class participation and Attendance	10%
Quizzes, Presentations and Assignments	20%
Mid Term Examination	30%
End Term (University) Examination	40%

Pedagogy:

- Lectures
- Case study
- Minor projects

Sessions	Topic	Percentile weightage
1 - 2	**Introduction to Statistics:** Basic concepts, Statistics in business, Data measurement, Uses	5%
3 - 5	**Descriptive Statistics: Measure of Central Tendency** Mean, Median, Mode, Percentiles, Quartiles, Numerical	5%
6 - 9	**Descriptive Statistics: Measures of Variation** Range, Inter-quartile range, Mean Absolute Deviation, Variance and Standard deviation, Numerical	5%

10 - 12	**Descriptive Statistics: Measures of Association** Correlation, Methods of Correlation study - Karl Pearson's coefficient of correlation, Rank correlation, Numerical	5%
13-16	**Simple Regression Analysis:** Introduction to regression analysis, regression lines, Residual analysis, Standard error of estimate, Coefficient of Determination & Estimation, Develop Trend line	10%
17-20	**Sampling and Sampling Distribution:** Sampling, Random Sampling Techniques, Nonrandom Sampling Techniques, Sampling Errors & Non-sampling Errors, Sampling Distribution of mean and proportion	10%
21-24	**Probability:** Introduction, Methods of assigning probabilities, Structure of probability, Marginal, Union, Joint and Conditional probabilities, Addition and Multiplication Laws, Baye's Theorem	10%
25-28	**Probability Distributions:** Discrete Distributions –Binomial Distribution, Poisson Distribution, Continuos Distributions - Normal Distribution	10%
29 - 31	**Statistical Inference: Estimation for Single Populations** Estimation population mean using z statistic (σ known), Estimating population mean using t statistic (σ unknown), Estimating population proportion, Estimating Sample Size,	5%
32 - 36	**Statistical Inference**: **Hypothesis Testing for Single Populations** Introduction to hypothesis testing, Testing hypothesis about a population mean (Standard deviation – Known and Unknown), Testing hypothesis about a proportion, Numerical	10%
37 - 42	**Statistical Inference**: **Hypothesis Testing for Two Populations** Hypothesis testing and Confidence Intervals about difference in two means using z statistic (Population Variances Known and Unknown), Statistical inferences for two related populations,	10%
43 - 46	**Analysis of Variance (ANOVA):** One-way ANOVA, Reading F table, Numerical, Learning on the Computer	5%
47 - 50	**Analysis of Categorical Data: Chi–Square-** Test of Independence, Test of Goodness of Fit, Numerical, Learning on the Computer	10%

Text Book:

1. Business Statistics for Contemporary Decision Making, Ken Black, 5th Edition, Wiley Publications (India Edition)

Reference Books:

1. Statistics for Management, Levin and Rubin, 7th Edition, Pearson
2. Statistics for Business and Economics, Anderson, Sweeney and Williams, 11th Edition, Cengage Learning
3. Statistics for Management, T. N. Srivastava and Shailaja Rego, 2nd Edition, TMH

4. Business Statistics in Practice, Bruce Bowerman, Richard T. O' Connell and Emily Murphree, 5th Edition, Tata McGraw hill
5. Statistics for Managers, Levine, Stephan, Krehbiel and Berenson, 5th Edition, PHI
6. Statistical Methods, S. P. Gupta, 34th Edition, Sultan Chand & Sons