Mandatory Course 2: Business Statistics

Course Type:	PG: Program General	Course Credits:	2
Course Code:	C1PM402	Course Duration:	30 Hours

Course Objectives:

- To know statistical techniques
- To understand different statistical tools
- To understand importance of decision support provided by analysis techniques
- To appreciate and apply it in business situations using case lets, modelling, cases and projects
- To understand Managerial applications of Statistics

Pre-requisites: Basic Mathematics

Course Outcomes:

- CO1. RECALL the basic terminologies related to the concepts of Business Statistics
- CO2. UNDERSTAND statistics as a crucial tool for data analysis and making justifiable business decisions
- CO3. MAKE USE OF appropriate data to calculate statistical measures for solving business problem
- CO4. ANALYZE the data and draw inferences from statistical findings for various business solutions
- CO5. COMPARE the results of statistical tests for taking informed business decisions
- CO6. DEVELOP a statistical report for a given business situation

Unit / Module	Content	CO Mapping	Hours Assigned
1	Introduction to Statistics: Types of variables (dependent, independent, mediating, moderating, extraneous, discrete, continuous), charts and graphs	CO1	3

2	Descriptive Statistics Measure of Central Tendency, Measure of variability, Interquartile Range, and Dispersion, Measure of shapes (Kurtosis and Skewness)	CO1, CO2	3
3	Probability & Permutations & Combinations Introduction to the concept of probability and permutations and combinations, Axioms, Addition and Multiplication rule, Theories of Probability, Types of probability, Independence of events, probability tree, Bayes' Theorem	CO2	3
4	Probability Distribution Concept of Random variable, Probability distribution, Expected value and variance of random variable, conditional expectation, Binomial distribution and its business application, Poisson and its business application, Normal and its business application	CO2, CO3	3
5	Sampling and Estimation Sampling Distribution, Types of sampling, Central Limit Theorem, Estimation- Point estimation , Interval estimation	CO3, CO4	3
6	Hypothesis Testing Introduction to Hypothesis testing, Importance of significance level (confidence level), margin of error, type I error and type II error, criteria for selection of right test	CO3, CO4	3
7	Parametric Test Univariate -Z test, one sample t-test significance Bivariate - T-test (paired and independent), Pearson's correlation, simple linear regression, one way-ANOVA	CO4, CO5	3
8	Non-parametric Test Univariate - Chi-square goodness for fit for uniform distribution Bivariate - Spearman's rank correlation,	CO4, CO5	3

	mann-whitney U test, Wilcoxon sign paired rank test, Chi-square test of independence		
9	Multivariate Analysis Overview of multiple Regression, Factor analysis, Multi- dimensional scaling and Discriminant Analysis (Theoretical Concepts only)	CO2	3
10	Practical Students should apply the statistical hypothesis testing on assumed/ hypothesized data using statistical software's	CO4, CO5, CO6	3

Text Books:

1. Ken Black, Business Statistics for Contemporary Decision making, Wiley, Latest Edition
2. Sanjiv Jaggia, Alison Kelly Business Statistics, McGraw Hill, Latest Edition
3. Richard I. Levin and David S., Rubin Statistics for Management, Pearson, Latest Edition
4. D. P. Apte, Statistics for Managers, Excel, Latest Edition
5. Gerald Keller & Hitesh Arora, Business Statistics, Cengage, Latest Edition

Reference Books:

1. Joseph Francis, Business Statistics, Cengage, Latest Edition
2. T N Srivastava and Shailaja Rego, Statistics for Management, TMH, Latest Edition
3. K. B. Akhilesh& S. B. Balasubrahmanyam, Mathematics and Statistics for Management Vikas
4. Naval Bajpai, Business Statistics, Pearson, Latest Edition
5. D. P. Apte M. S., Excel: Statistical Tools for Managers, Excel, Latest Edition
6. Qazi Zameerudin, Vijay K. Khara, S. K. Bhamri, Business Mathematics, Vikas, Latest Edition