Course Title: Business Statistics

Course Objectives:

This course provides basic overview of the statistical methods and analysis of data. After studying the course, students would be able to analyze historical data for decision making. This course also provides an insight into basic probability theory and sampling procedures.

Prerequisites:

1	Business Mathematics

Course Contents	
Basics of statistics: Collection and tabulation of data	Studying statistics and its applications in business Understanding various methods of data collection Learning to organize and summarize data in a frequency distribution Presenting data using simple bar charts, multiple bar charts and component bar chart Using a pie chart, histogram, frequency polygons, ogives, stem and leaf plots, and box and whisker plots and analyzing data
Measures of central tendency and dispersion	Learning to calculate measures of central tendency: mode, median, arithmetic mean, geometric mean, and harmonic mean Understanding pros and cons of different measures of central tendency Understanding and using measures of dispersion: standard deviation, variance, range Using measures of dispersion to ascertain degree of variation or variability in a distribution
Index numbers	Understanding index numbers, their types, uses and limitations Using different methods to calculate index numbers Applying index numbers to purchasing power and inflating or deflating a series
Methods of lease square and regression	Understanding and using scatter diagrams and their limitations Understanding basics of a regression line and uses Using least square linear regression to construct a regression line and analyze it Using regression line to forecast value of dependent variable if value of independent variable is provided
Correlation	Understanding basic concept of correlation and calculating and analyzing correlation coefficient and coefficient of determination Understanding and using rank order correlation and analyzing it
Counting techniques and probability theory	Using counting techniques like mn counting rule, and factorials Using permutations and combinations to see total numbers of outcomes Understanding probability and other basic terminology of probability theory
Addition law for mutually exclusive and non-mutually	Using addition rule to calculate probability Understanding different between mutually exclusive and non-

exclusive events Multiplication laws for dependent and independent events	mutually exclusive events Using multiplication rule to calculate conditional probability Understanding difference between dependent and independent events
Binominal distribution and Poisson distribution	Understanding assumptions of binominal distribution and using it in calculation of probabilities Understanding properties of Poisson distribution and using it in calculation of probabilities
Hyper-Geometric distribution and normal distribution	Understating uses of hypergeometric distribution and using it to calculate probabilities Understanding uses of normal distribution and use of its tables Using normal distribution to calculate probabilities
Sampling theory: Simple random sampling	Understanding basics of sampling theory: population, sample, sampling space Understanding and using simple random sampling
Sampling distribution of a mean and standard error of a mean Sampling with and without replacement	Understanding and developing a sampling distribution for sampling mean, and calculating mean and standard deviation of a sampling distribution Understanding and calculating standard error of mean Using appropriate sampling technique to calculate probabilities for sampling mean
Testing hypothesis for population mean, difference between population means and population proportion and between two population properties	Using hypothesis testing and significance criteria Performing hypothesis test of population means based on small and large samples Performing hypothesis tests of the difference between two population means based on small and large samples Performing hypothesis tests of the difference between two population properties Understanding to select appropriate distributions i.e. z or t for constructing confidence interval for a population mean
Single proportion variance based on test of Chi-square Confidence interval for estimating population means, proportions, and variance, and differences between proportion means, proportion and variance	Using Chi-Square distribution to test goodness of fit and independence Constructing confidence interval for population means and differences of means Constructing confidence interval for population means and difference of proportion and variance
Determination of sample size for the study of population mean and proportion	Calculating sample size for an interval estimate of population mean and proportion

Teaching Methods: Lectures, discussions, presentations, quiz & assignments

Assessment Mechanism/Criteria

40% (40 Marks)	Internal Assessment by affiliated institution	*15Marks for Assignments, Quizzes and others **25 Marks for Mid-term Exam
60% (60Marks)	External Assessment by the Punjab University	Final Term Examination

Suggested Readings:

1 AFC-03 Quantitative Methods – Study Text by ICAP
2 Business Statistics, 8th Edition by David F. Groebner, Patrick W. Shannon, Philip C. Fry, Kent D. Smith
3 Applied Statistics in Business and Economics by David P. Doane and Lori E. Seward
4 Statistics for Business and Economics by James McClave, P. George Benson, Terry Sincich.