

STT 201: Business Statistics

BIM 3rd Semester

Credits: 3

Lecture Hours: 48

Nature of the course: Theory and Practical with EXCEL (60% + 40%)

Course Objectives

The principal objective of Business Statistics is for students to describe data and make evidence based business decisions making using descriptive and inferential statistics that are based on well-reasoned statistical arguments. The course will cover the basic tools used to describe data for the purposes of transforming data into information. In addition, the course will present the fundamentals of statistical inference showing how it is possible to examine a small subset of data to reach conclusions about the larger set of data. The statistical tools should be introduced from an applied perspective using business related examples. Microsoft Excel software will be used throughout the course to aid in statistical analysis.

Course Description

Statistics in business and management, describing data using graphs and tables. Numerical measures: central tendency, dispersion, skewness and kurtosis. Probability: laws of probability, conditional probability. Probability distribution: discrete probability distribution and continuous probability distribution. Sampling theory: sampling techniques, sampling and non-sampling errors. Estimation: point and interval estimates. Hypothesis testing: test of significance for large samples. Linear correlation and regression.

Course Details

Unit 1: Describing Data using Graphs and Tables

4 LHs

Uses and scope of statistics in business and management, Frequency distribution, Stem-and-leaf plots, Diagrams (Simple bar diagram, Sub-divided bar diagram, Multiple bar diagram, and Pie-chart) and graphical presentation of frequency distribution – Histogram, Ogive curve, Problems using Excel.

Unit 2: Describing Data Using Numerical Measures

9 LHs

Measures of central tendency (Mean, Median and Mode), Partition values (Quartiles, Deciles and Percentiles); Measures of variation (Range, Inter quartile Range, Quartile deviations, Standard deviation); Variance and Coefficient of Variation; Measurement of skewness (Karl Pearson coefficient of skewness and Bowley coefficient of skewness); Measurement of kurtosis (Percentile coefficient of kurtosis); Five number summary, Box-and -Whisker plot, Problems using Excel.

Unit 3: Simple Linear Correlation Analysis**5 LHs**

Introduction, Scatter plot, Karl Pearson's correlation coefficient including bi-variate frequency distribution, Coefficient of determination, Test of significance of sample correlation coefficient using probable error, Spearman's rank correlation coefficient, Problems using Excel.

Unit 4: Simple Linear Regression Analysis**4 LHs**

Introduction, Simple linear regression models, Assumptions of linear regression model, Line of best fit, Linear regression model by least-squares method, Interpretation of regression coefficients, Properties of regression coefficient, regression coefficient for bi-variate frequency distribution, Problems using Excel.

Unit 5: Probability**4 LHs**

Introduction, Sample space and events, Probability, Laws of probability, Conditional probability, Problems using Excel.

Unit 6: Probability Distributions**6 LHs**

Introduction, Discrete probability distribution (Binomial distribution and Poisson distribution), Continuous probability distribution (Normal distribution), Problems using Excel.

Unit 7: Sampling Theory**3 LHs**

Introduction, Population and sample, Objectives of sampling, Sampling techniques, Sampling and non-sampling errors, Standard error, Concept of central limit theorem.

Unit 8: Estimation**6 LHs**

Introduction, Properties of good estimator (Consistency, Unbiasedness, Efficiency and Sufficiency), Point and interval estimates, Level of confidence, Confidence interval estimates for mean and proportion, Determination of sample size for mean and proportion, Problems using Excel.

Unit 9: Introduction to Hypothesis Testing**7 LHs**

Introduction, Steps of hypothesis testing, Level of significance, Critical region, One tailed test and two tailed test, Hypothesis testing using critical value and p-value approaches, Test of significance for large samples (Z-test): Test of significance of a single mean and difference between two means, Test of significance of a single proportion and difference between two proportions, Problems using Excel.

Suggested Readings

- Davis, G. and B. Pecar. *Business Statistics using EXCEL*, Oxford University Press.
- Levine, D.V., D.F. Stephan and K. A. Szabat. *Statistics for managers using MS excel*, Pearson.
- Linda, H. and F. John. *Applied Statistics for Business and Management using Microsoft Excel*, Springer.
- Trevor, W. *Applied Statistics: Methods and Excel-Based Application*, JUTA Academics.