

Quantitative Techniques

Course Objectives

This subject introduces the methods of statistical analysis for managerial decision making. The subject will provide a concise review of probability, descriptive statistics, random variables, and probability distributions. Application topics include statistical decision theory, confidence intervals, hypothesis testing, simple and multiple regression, correlation analysis and analysis of variance.

Syllabus

Random variables, Descriptive Statistic, Probability Distributions and Estimation, Testing of Hypothesis, Correlation and Regression Analysis

Expected Outcome

The successful completion of this course will impart the basic data analysis skills to the students. This will enable students to model business problems and analyse them with the help of fundamental statistical and theoretical backgrounds.

References

1.

Richard I. Levin, David S. Rubin, Statistics for Management, Pearson Education, New Delhi 7th Edition, 2011.

2.

Aczel A.D. and Sounderpandian J., Complete Business Statistics, 6th edition, Tata McGraw – Hill Publishing Company Ltd., New Delhi, 2012.

3.

Ken Black, Applied Business Statistics, 7th Edition, Wiley India Edition, New Delhi, 2012.

4.

Anderson D.R., Sweeney D.J. and Williams T.A., Statistics for Business and Economics, 11th edition, Thomson (South – Western) Asia, Singapore, 2012.

COURSE PLAN

Random variables: Random experiment – outcomes - sample space and events - definitions of probability (classical, relative frequency, subjective, and axiomatic) - addition rule - conditional probability - multiplication theorem – Bayes' theorem

Descriptive Statistics: Data presentation using tables & charts - measures of central tendency - measures of dispersion – absolute & relative measures – skewness - Karl Pearson's and moment measures of Skewness – Kurtosis

First Internal Examination

Probability Distributions and Estimation: Discrete and continuous distributions - Binomial, Poisson & Normal distributions - sampling techniques - sampling distribution of means and proportions - central limit theorem – statistical inferences - estimation - point and interval estimates for population parameters of large and small samples – confidence interval - determining the sample size.

Testing of Hypothesis: Null & Alternative Hypotheses - level of significance - Type I & Type II errors - small sample & large sample tests - tests for quantitative & qualitative data - Hypothesis tests for difference of means & proportions for large & small samples.

Second Internal Examination

One way & two way ANOVA for testing the difference of means of more than two samples – chi-square test for several proportions, association of attributes – goodness of fit test.

Correlation and Regression Analysis: Correlation - different types of correlation – Karl Pearson's correlation coefficient - Spearman's Rank correlation coefficient – concurrent deviation method – coefficient of determination - regression analysis - line of best fit - least square method - business applications - multiple regression. Use of statistical packages in hypothesis testing, correlation and regression analysis

Final Examination