## EMANVAC02- Business Analytics

### Unit I Introduction

Introduction to Probability Theory: Classical, empirical and subjective probabilities.Introduction to statistics and data – Types of data - Features of data distributions  - Center,  Spread,  Shape,  Symmetry, Skewness and  Kurtosis - Frequency Distributions, Dot plot, Bar chart, Pie chart, Histogram, Stem and Leaf diagrams- Measures of Center - Mean, Median, Mode - Measures of Spread - Range, Variance, Standard Deviation; -Measures of Relative Position: z- score, coefficient of variation- simple linear regression and correlation.

### Unit II Probability distributions –Sampling distribution and Hypothesis testing

Distribution  and  functions:  Random  Variables,  Discrete  Random Variables,  Probability  Distributions  and  Probability  Mass  Functions, Mean  and  Varianceof  a  Discrete  RandomVariable.Continuous  Random Variables, Probability Distributions and Probability Density Functions,Mean and Variance of a Continuous Random Variable - Normal Distribution.

Statistical Inference:   Sampling Distribution,Central Limit Theorem– t distribution.Testing of Hypothesis:Introduction to hypothesis testing - one sample test for means.

### Unit III  Forecasting

Forecasting - Components of demand –Qualitative and Quantitative methods –Naïve method -Single movingaverage method - Simple linear regression model –Measures of accuracy.

### Unit IV  Monte Carlo simulation

Introduction  to  simulation  –  Types  of  simulation  -Advantages  and disadvantages of simulation – Introduction to Monte Carlo simulation - Applications of Monte Carlo simulation for queuing and demand problems.

**Unit V Laboratory: Exercises using Minitab:**

Getting Started with MINITAB

ORGANIZING DATA - Graphing Data Using MINITAB – Dot plot - Frequency distribution - Bar chart – Pie chart - Histograms –Pareto chart

Describing data using numerical measures – Measures for central tendency, variation and relative position

HYPOTHESIS TESTING - Testing a Single Population Mean

## Text Books:

Dinesh Kumar U., "Business Analytics: The science of data driven decision making" Wiley India, (2017).

Prem S Mann., Introductory Statistics, 9th Edition, Wiley India, (2016).

Sharma J.K., "Operations research: Theory and applications", 6th Edition, Trinity Press, (2016).

## References:

David F. Groebner., Patrick W.Shannon and Philip C. Fry., Business statistics: A decision making approach, 10th Edition, Pearson Education, (2018).

James R Evans., "Business Analytics- Methods, Models and Decisions" Pearson Education, 2nd Edition, (2017).

Jeffrey D. Camm., James J. Cochran., Michael J. Fry., Jeffrey W. Ohlmann., David R. Anderson., Dennis J. Sweeney and Thomas A. Williams 'Essentials of Business Analytics" Cengage learning, 3rd edition, (2019).