

# Course Outcome

## 1<sup>st</sup> Year : Descriptive Statistics and Probability Distributions

### The Students will acquire

- 1) Knowledge of Statistics and its scope and importance in various areas such as Medical, Engineering, Agricultural and Social Sciences etc.
- 2) Knowledge of various types of data, their organization and evaluation of summary measures such as measures of central tendency and dispersion etc.
- 3) Knowledge of other types of data reflecting quality characteristics including concepts of independence and association between two attributes,
- 4) Insights into preliminary exploration of different types of data.
- 5) Knowledge of correlation, regression analysis, regression diagnostics, partial and multiple correlations.
- 6) Ability to distinguish between random and non-random experiments,
- 7) Knowledge to conceptualize the probabilities of events including frequentist and axiomatic approach. Simultaneously, they will learn the notion of conditional probability including the concept of Bayes' Theorem.
- 8) Knowledge related to concept of discrete and continuous random variables and their probability distributions including expectation and moments,
- 9) Knowledge of important discrete and continuous distributions such as Binomial, Poisson, Geometric, Negative Binomial and Hyper-geometric, normal, uniform, exponential, beta and gamma distributions.
- 10) To apply standard discrete and continuous probability distributions to different situations.
- 11) Knowledge related to concept of discrete and continuous random variables and their probability distributions including expectation and moments,

## 2<sup>nd</sup> Year : Statistical Methods and Inference

### The students will acquire

- 1) The situation where there is uncertainty and how to measure that uncertainty by defining the probability, random variable and mathematical expectation which are essential in all research areas.
- 2) An idea of using various standard theoretical distributions, their chief characteristics and applications in analyzing any data.
- 3) The measures of dispersion throw light on reliability of average and control of variability

- 4) The concept of Correlation and Linear Regression deals with studying the linear relationship between two or more variables, which is needed to analyze the real life problems.
- 5) The attributes gives an idea that how to deal with qualitative data.
- 6) Concept of law large numbers and their uses
- 7) Concept of central limit theorem and its uses in statistics
- 8) Concept of random sample from a distribution, sampling distribution of a statistic, standard error of important estimates such as mean and proportions
- 9) Knowledge about important inferential aspects such as point estimation, test of hypotheses and associated concepts
- 10) Knowledge about inferences from Binomial, Poisson and Normal distributions as illustrations
- 11) Concept about non-parametric method and some important non-parametric tests.

## 3<sup>rd</sup> Year: Applied Statistics

### The students shall get

- 1) Introduced to various statistical sampling schemes such as simple, stratified and systematic sampling.
- 2) An idea of conducting the sample surveys and selecting appropriate sampling techniques,
- 3) Knowledge about comparing various sampling techniques.
- 4) Carry out one way and two way Analysis of Variance,
- 5) Understand the basic terms used in design of experiments,
- 6) Use appropriate experimental designs to analyze the experimental data.
- 5) Time series data, its applications to various fields and components of time series,
- 6) Fitting and plotting of various growth curves such as modified exponential, Gompertz and logistic curve
- 7) Fitting of trend by Moving Average method,
- 8) Measurement of Seasonal Indices by Ratio-to-Trend , Ratio-to-Moving Average and Link Relative methods,
- 9) Applications to real data by means of laboratory assignments.
- 10) Interpret and use a range of index numbers commonly used in the business sector
- 11) Perform calculations involving simple and weighted index numbers
- 12) Understand the basic structure of the consumer price index and perform calculations involving its use
- 13) Various data collection methods enabling to have a better insight in policy making, planning and systematic implementation,
- 14) Construction and implementation of life tables
- 15) Population growth curves, population estimates and projections,
- 16) Real data implementation of various demographic concepts as outlined above through practical assignments.

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