Bachelor of Computer Applications

- **Sem.** : 3

- **Subject Code** : 05BC1301

- **Subject** : Basic Statistics

- **Course Objectives** :

  1. The objective of this course is to enable students to obtain understanding of basic statistical concepts which can be applicable in various computer science problems.
  2. The objective of this course is to enable students to understand concepts of Ungrouped Data, Frequency Distribution and Data Graphs to solve simple application problems related to Computer Science based on these.
  3. The objective of this course is to enable students to apply basic concepts of probability to solve problems.
  4. The objective of this course is to enable students to analyse characteristic of a population and estimate population.
  5. The objective of this course to enable students to analyse concept of regression modelling.

- **Prerequisites** : None

Unit No	Topics Covered	No of lectures required
1	**Descriptive Statistics** Data Types (Group Data, Ungrouped Data) Ungrouped Data: Mean, Median, Mode, Percentiles, Quartiles, Five Number Summary, Coefficient of Variance, Mean Absolute Deviation, Population Variance, Population Standard Deviation, Sample variance, Sample Standard Deviation Frequency Distribution: Frequency , Percentage Frequency, Cumulative Frequency , Relative Frequency Graphs : Histogram, Ogive, Frequency Polygon, Bar Graph, Stem – Leaf Display	10

2	**Basic Probability:** Definition of Probability, Random Sample, Sample Space, Events , Elementary Events, Experiments, Independent Events, Complementary Events, Mutually Exclusive Events, Formula for finding probability, Union Probability, Joint Probability, Conditional Probability, Addition Theorem of Probability, Law of conditional probability , Probability Matrix.	10
3	**Sampling & Estimation of a single population:** Sampling Techniques: Simple Random Sampling(Stratified Sampling, Systematic Sampling, Cluster Sampling) , Non Random Sampling (Convenience Sampling, Judgement Sampling, Quota Sampling, Snowball Sampling), Estimation of Population Mean using Z – statistics (sigma known) for finite and infinite population , Estimation of Population Mean using t – Statistics (sigma unknown), Estimation of Population Proportion , Estimation of Sample Variance	10
4	**Testing a Hypothesis of a single population:** Types of Hypothesis, Rejection and Non- rejection region, Type –I Error, Type – II Error, Testing Hypothesis about a population mean using Z- statistics (sigma known) , Testing Hypothesis about a population mean using t – Statistics (sigma unknown),Estimation of Population Proportion , Estimation of Population Variance	10
5	**Correlation & Regression** Karl Pearson Correlation Coefficient, Introduction to Simple Regression Analysis, Determining the equation of Regression Line, Prediction of dependent Variable by Regression Line, Residual Analysis, Sum of Square Due to Error, Sum of Square of Regression, Standard Error Estimation, Total Sum of Square , Coefficient of determination	10

- **Course Outcomes:**

  1. To compute descriptive statistics including diagrammatic representation and interpretation
  2. To calculate probability and classify the probability usage in different area
  3. To test sampling characteristic from a population based on statistical measures & construct a sample for experiment.
  4. To verify decision statements by parametric methods.
  5. To determine simple linear regression analysis and correlation to understand time series analysis and application to predict value of unknown variable.

- **Course Outcomes – Program Outcomes Mapping Table :**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	H	H	M		H						H
CO2	H	H			H						
CO3	H	M		L	H						
CO4	H	H	H	L	H						H
CO5	H	H	M	L	H						M

- **Text Book :**

  1. Business Statistics for Contemporary Decision Making " by Ken Black, Wiley Publication.

- **Reference Books   :**

  1. "Statistics for business and economics", Anderson, Sweeney, Williams, Thompson Publication, 9th edition
  2. "Statistical Methods", S P Gupta, S. Chand Publication, 13th Edition
  3. "Business Statistics", Bharat Jhunjhunwala, S Chand Publication 2008 , 1st Edition

- **Web References :**

  1. www.uva.onlinejudge.org
  2. https://ebookpdf.com/descriptive-statistics

- **App References :**

  1. whatagraph

- **Syllabus Coverage from text /reference book & web/app reference:**

Unit No.	Chapter Numbers
1	**1(**1.1 to 1.3) **, 2 (**2.1 to 2.3**), 3(3.1 to 3.2)**
2	4(4.1 , 4.3 to 4.7)
3	7(7.1) ,8(8.1 to 8.3)
4	9(9.1 to 9.3)
5	14(14.1 to 14.4)