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| Name of the Assistant/Associate Professor: Dr. Jyoti |
| Class and Section: B.Sc hons (1st sem) |
| Subject: STATISTICS |
| Paper: Discriptive Statistics |
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| October |
| Week 2Introduction of Statistics, Basic knowledge of various types of data.Examples and problems |
| Week 3Collection,Classification and tabulation of data.Discuss problems Class test  |
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| Week 4Presentation of data: histograms, frequency polygon,frequency curve and ogives.Stem- and- Leaf and Box plotsExamples Class test |
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| November  |
| Week 1  Diwali Holiday |
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| Week 2Unit -2Measures of Central Tendency and Location: Mean, medianExamplesProblem discussionTest |
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| Week 3Measures of Central Tendency and Location: mode, geometric mean,harmonic mean, partition values.NumericalsProblemsTest |
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| Week 4Measures of Dispersion: Absolute and relative measures of range, quartile deviation,mean deviation,NumericalsMeasures of Dispersion: standard deviation, coefficient of variation.Problem discussionTest |
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| December |
| Week 1 Unit -3 |
| Assignments:Moments, Skewness and Kurtosis: Moments about mean and about any point andderivation of their relationshipsnumericalstest |
| Week 2 |
| Assignments:effect of change of origin and scale on momentsNumericalsPresentationTest |
| Week 3 |
| Assignments:effect of change of origin and scale on momentsNumericalsProblemsPresentations |
| Week 4 |
| Assignments:Concepts ofSkewness and Kurtosis.NumericalAssignment |
| Week 5 |
| Assignments:Disscus problemsNumericalTest |

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| January |
| Week 1 Unit- 4 |
| Assignments:Theory of Attributes: Symbolic notation, dichotomy of data, class frequencies, order ofclass frequenciesproblemstest |
| Week 2 |
| Assignments:consistency of data, independence and association of attributesassignmentproblem discussiontest |
| Week 3 |
| Assignments:Yule’scoefficient of association and coefficient of colligation.NumericalsAssignment Test |
| Week 4 |
| Assignments:Correlation for Bivariate Data: Concept and types of correlationAssignmentTestScatter diagram, KarlPearson Coefficient (r) of correlationNumericalPresentationrank correlation coefficient Revision |

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| Name of the Assistant/Associate Professor: **Dr. Sudesh**  |
| Class and Section: Math-Honrs 3-Sem |
| Subject: Statistics |
| Paper: Probability Distributions |
| October |
| Week 2; Unit 1Generating Functions: Moment generating function, Properties and applications of moment generating function,Examples and problems |
| Week 3Cumulant generating function, Properties and applications of cumulant generating function, Discuss problems,Class test  |
| Week 4Tchebychev's inequality, Numerical problems based on Tchebychev's inequality, Bernoulli Distribution |

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| November |
| Week 1, Holiday |
| Week 2, Unit -2 Binomial distribution, Problem discussion |
| Week 3Possion distribution along with its properties, Numerical Problems, Class test |
| Week 4Geometric distribution along with its properties and Hyper-geometric Distribution |
| December |
| Week 1, Unit -3Uniform and gamma distribution with their properties, Numerical test |
| Week 2Beta first kind and second kind distribution with their properties Presentation and Test |
| Week 3Exponential distribution with its properties, Numerical Problems |
| Week 4Assignments, Presentation on distributions |
| Week 5Assignments: Discuss problems, Numerical and Test |
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| January |
| Week 1, Unit- 4 Introduction to normal distribution, Normal distribution as limiting case of binomial distribution problems |
| Week 2Assignments: characteristics of normal distribution, Mode and median of normal distribution, m.g.f. and c.g.f of normal distributionproblem discussion |
| Week 3Assignments:Mean deviation about mean and area property of normal distributionProblem discussion, Class test  |
| Week 4Assignments: Numerical problems based on normal distribution |
| Week 5Assignments: Problem discussion, Presentation , and Class test |

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| **Name of the Assistant/Associate Professor: DrJyoti** |
| **Class and Section: BSc II/ BA II (Sem III)** |
| **Subject: Statistics** |
| **Paper:** Sample Surveys and Elementary Inference |
| **October** |
| **Week 2****Chapter**Concepts of census, Sample survey, Basic concepts in sampling,Sampling errors, Non sampling errors, Principal steps involved in a sample survey |
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| **Week 3****Chapter**Accuracy and mean squared errors, Some basic sampling methods, Simple random sampling (SRS) with replacement, Simple random sampling without replacement, TEST |
| **Week 4****Chapter**Use of random number tables, Estimator of mean, Estimator of its variance in case of simple random sampling, Estimators of proportions, Estimators of ratios |
| **November** |
| **Week 1****Holidays** |
| **Week 2****Chapter**Stratified random sampling, Estimation of population mean, Test, |
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| **Week 3****Chapter**Variance of the estimate of population mean of stratified random sampling, Allocation of sample size, Proportional allocation, Optimum allocation, Comparison of stratified random sampling with simple random sampling |
| ***Assignments:*** |
| **Week 4****Chapter**Systematic random sampling, Its various results about varianceTest |
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| **December** |
| **Week 1** **Chapter**Statistical Estimation: Parameter and statistic, Sampling distribution of statistic, Point estimate of a parameter, Test |
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| **Week 2****Chapter**Concept of bias and standard error of an estimate, Standard errors of sample mean, Sample proportion, Standard deviation, Characteristics of good estimator |
| **Week 3****Chapter**Unbiasedness, Efficiency, Sufficiency, Methods of Estimation, Method of moments |
| ***Assignments:*** |
| **Week 4****Chapter:**Method of maximum likelihood, Testing of Hypotheses, Null hypotheses, Alternative hypotheses, Simple and composite hypotheses, Critical region |
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| **Week 5****Chapter:**Level of significance, One tailed testing, Two tailed testing, Types of errors, Test |
| ***Assignments:*** |
| **January** |
| **Week 1** **Chapter**Neyman- Pearson LemmaTest |
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| **Week 2****Chapters**Test of simple hypothesis against a simple alternative in case of Binomial |
| ***Assignments:*** |
| **Week 3****Chapter**Poisson and Normal distribution, Large Sample Test, Testing and interval estimation of a single mean, A single proportion, Difference of two means of two proportions, Fisher’s Z transformation |
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| **Week 4****Chapter:**Sampling examples, Sampling based numericals, Comparison of hypothesis, Numerical on large sample test, Numerical, Errors comparison, Revision |
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| **Teacher 's name : Sandeep Kumar** |
| **Class and Section: B.Sc. III (Mathshons)(5th Sem)**  |
| **Subject: MATHEMATICS** |
| **Paper: Operation Research** |
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| **August** |
| **Week 2 : Definition, scope, methodology and applications of OR. Types of OR models. Concept of optimization.** |
| **Week 3 : Linear Programming : Introduction, Formulation of a linear programming problem (LPP), Requirements of an LPP.** |
| **Week 4 : Advantages and limitations of LP.** |
| **September** |
| **Week 1 : Graphical solution : Multiple, unbounded and infeasible solutions.**  |
| **Week 2 : Revision and Test** |
| **Week 3 : Principle of simplex method : standard form, basic solution, basic feasible solution.** |
| **Week 4 : Computational Aspect of simplex method : cases of unique feasible solution, no feasible solution, multiple solution.** |
| **Week 5 : Revision and Test** |
| **October** |
| **Week 1****Unbounded solution and degeneracy. Two Phase and BigM methods** |
| **Week 2 : Revision and Test** |
| ***Assignments:*** |
| **Week 3 : Duality in LPP, primal-dual relationship** |
| ***Assignments:*** |
| **Week 4 : Transportation Problem: Methods for finding basic feasible solution of a transportation problem** |
| **Week 5 : Revision and Test** |
| **November** |
| **Week 1: Modified distribution method for finding the optimum solution** |
| ***Assignments:*** |
| **Week 2 : Unbalanced and degenerate transportation problems** |
| ***Assignments:*** |
| **Week 3 : Transshipment problem** |
| **Week 4 : Maximization in transportation problem** |
| **Week 5 : Revision and Test** |
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| ***December*** |
| **Week 1 : Assignment Problem : Solution by Hungarian method.** |
| **Assignments:** |
| **Week 2 : Crew assignment and Travelling salesman problem** |
| **Assignments:** |
| **Week 3 : Game Theory : Two-person zero sum game, Game with saddle points, the rule of dominance; Algebraic, graphical.** |
| **Assignments:** |
| **Week 4 : Linear programming methods for solving mixed strategy games** |
| **Assignments :** |
| **Week 5 : Revision and Test** |
| **January** |
| **Week 1 : Unbalanced assignment problem** |
| **Week 2 : Maximization in assignment problem** |
| **Week 3 : Revision and Test** |
| **Week 4 : Revision and Test** |
| **Week 5 : Revision and Test** |

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| **Teacher 's name : Sandeep Kumar** |
| **Class and Section: B.Sc. Ist Year (Mathshons)(1st Sem)**  |
| **Subject: STATISTICS** |
| **Paper: PROBABILITY THEORY, STATISTICAL METHODS** |
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| **NOVEMBER** |
| **Week 5 : Revision and Test** |
| **DECEMBER** |
| **Week 3 : Revision and Test** |
| **JANUARY** |
| **Week 1 : Introduction of Statistics :** Origin, development, definition, scope, uses and limitations. |
| **Week 2 : Types of Data :** Qualitative and quantitative data, nominal and ordinal data, cross sectional and time series data, discrete and continuous data, frequency and non-frequency data. |
| **Week 3 : Collection and Scrutiny of Data :** Collection of primary and secondary data-its major sources including some government publications, scrutiny of data for internal consistency and detection of errors of recording, classification and tabulation of data. |
| **Week 4 : Presentation of Data :** Diagrammatic and graphical presentation of grouped data. Graphing the data constructing histograms, frequency polygon, frequency curve and ogives. |
| **Week 5 : Revision and Test** |
| **FEBRUARY** |
| **Week 1: Measures of Central Tendency and Location :** Mean, median, mode, geometric mean, harmonic mean ; partition values-quartiles, deciles, percentiles and their graphical location. |
| **Week 2 : Measures of Dispersion :** Absolute and relative measures of range, quartile deviation, Mean deviation, standard deviation (σ), root mean square deviation (s), relation between σ and s, variance of the combined series, Coefficient of variation. |
| **Week 3 : Moments, Skewness and Kurtosis :** Moments about mean and about any point and derivation of their relationships, effect of change of origin and scale on moments, Sheppard’s correction for moments (without derivation), Charlier’s checks; concepts of Skewness and Kurtosis and their measures/coefficients including those based on quartiles and moments. |
| **Week 4 : Theory of Attributes :** Symbolic notation, dichotomy of data, class frequencies, order of class frequencies, consistency of data, independence and association of attributes. Yule’s coefficient of association and coefficient of colligation. |
| **Week 5 : Revision and Test** |
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| ***December*** |
| **Week 1 : Assignment Problem : Solution by Hungarian method.** |
| **Assignments:** |
| **Week 2 : Crew assignment and Travelling salesman problem** |
| **Assignments:** |
| **Week 3 : Game Theory : Two-person zero sum game, Game with saddle points, the rule of dominance; Algebraic, graphical.** |
| **Assignments:** |
| **Week 4 : Linear programming methods for solving mixed strategy games** |
| **Assignments :** |
| **Week 5 : Revision and Test** |
| **January** |
| **Week 1 : Unbalanced assignment problem** |
| **Week 2 : Maximization in assignment problem** |
| **Week 3 : Revision and Test** |
| **Week 4 : Revision and Test** |
| **Week 5 : Revision and Test** |

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| **Week 3**Transshipment problem, |
| **Week 4**maximization in a transportation problem. |
| **January** |
| **Week 1**Assignment Problem: Solution by Hungarian method, Unbalanced assignment problem, maximization in an assignment problem |
| ***Assignments:*** |
| **Week 2**Crew assignment and Travelling salesman problem |
| ***Assignments:*** |
| **Week 3**Game Theory: Two-person zero sum game, Game with saddle points, the rule of dominance; Algebraic,graphical. |
| ***Assignments:*** |
| **Week 4** linear programming methods for solving mixed strategy games |
| ***Assignments:*** |

**Lesson Plan**OCTOBER 2021 TO JANUARY 2022

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| **Teacher 's name : SANDEEP KUMAR** |
| **Class and Section: B.Sc. 1st Year(1st Semester)**  |
| **Subject: STATISTICS** |
| **Paper: PROBABILITY THEORY, STATISTICAL METHODS** |
| **October** |
| **Week 2:Basic concepts of probability,set theory,union, intersection, complement of a set** |
| **Week 3 : Concepts in Probability :** Random experiment, trial, sample point, sample space, operation of events, exhaustive, equally likely and independent events; Definition of probability classical, relative frequency. |
| **Week 4 :Statistical and axiomatic approach:** Addition and multiplication laws of probability and their extension to n events. Boole’s inequality; Bayes theorem and its applications. |
| **Week 5 : Revision and Test** |
| **November** |
| **Week 1 : Random Variable and Probability Functions:** Definition and properties of random variable, discrete and continuous random variable, probability mass and density functions, distribution functions. |
| **Week 2 : Mathematical Expectation :** Definition and its properties-moments, measures of location, dispersion, skewness and kurtosis. Addition and multiplication theorem of expectation. |
| **Week 3 : Revision and Test.** |
| **Week 4 : Generating Functions :** Moments generating function |
| **Week 5 :** Cumulant generating function, probability generating function along with their properties. |
| **December** |
| **Week 1 : Introduction of Statistics :** Origin, development, definition, scope, uses and limitations. |
| **Week 2 : Types of Data :** Qualitative and quantitative data, nominal and ordinal data, cross sectional and time series data, discrete and continuous data, frequency and non-frequency data. |
| **Week 3 : Collection and Scrutiny of Data :** Collection of primary and secondary data-its major sources including some government publications, scrutiny of data for internal consistency and detection of errors of recording, classification and tabulation of data. |
| **Week 4 : Presentation of Data :** Diagrammatic and graphical presentation of grouped data. Graphing the data constructing histograms, frequency polygon, frequency curve and ogives. |
| **Week 5 : Revision and Test** |
| **January** |
| **Week 1: Measures of Central Tendency and Location :** Mean, median, mode, geometric mean, harmonic mean ; partition values-quartiles, deciles, percentiles and their graphical location. |
| **Week 2 : Measures of Dispersion :** Absolute and relative measures of range, quartile deviation, Mean deviation, standard deviation (σ), root mean square deviation (s), relation between σ and s, variance of the combined series, Coefficient of variation. |
| **Week 3 : Moments, Skewness and Kurtosis :** Moments about mean and about any point and derivation of their relationships, effect of change of origin and scale on moments, Sheppard’s correction for moments (without derivation), Charlier’s checks; concepts of Skewness and Kurtosis and their measures/coefficients including those based on quartiles and moments. |
| **Week 4 : Theory of Attributes :** Symbolic notation, dichotomy of data, class frequencies, order of class frequencies, consistency of data, independence and association of attributes. Yule’s coefficient of association and coefficient of colligation. |
| **Week 5: Revision and test** |

**Name of the Assistant Professor: Dr. Permila** |
| **Class and Section: BA/BSC Vth Sem** |
| **Subject: Statistics** |
| **Paper: Applied Statistics, Numerical Methods & Fundamentals of Computers** |
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| October Week 2Index Number: definition, problems involved in the construction of index numbers, calculation of index numbers-simple aggregate method, weighted aggregates method |
| Week 3Simple average of price relatives, weighted average of price relatives, link relatives, chain indices, value index numbers, price and quantity index numbers, Laspeyre’s, Paasche’s, Marshall-Edgeworth and Fisher’s index numbers  |
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| Week 4Time and factor reversal tests of index numbers, consumer price index number and its uses. Base shifting, splicing and deflating of index numbers |
| November Week 1 Time Series Analysis: Definition, components of time series-trend, seasonal variations, cyclic variations, irregular component, illustration, additive and multiplicative models, determination of trend-graphic method |
| Week 2 Semi-averages method, method of curve fitting by principle of least squares, growth curves and their fitting, moving average method. Analysis of seasonal fluctuations.  |
| Week 3 Construction of seasonal indices using method of simple averages, ratio to trend method, ratio to moving average method and link relative method. |
| Week 4 Demographic Methods: Sources of demographic data-census, register, adhoc survey, hospital records, measurement of mortality, crude death rate, specific death rate, standardized death rates.  |
| DecemberWeek 1 Complete life tables and its main features, assumptions, descriptions and construction of life tables, uses of life tables, Abridged life table using King’s method, stationary and stable population.  |
| Week 2Measurement of fertility-crude birth rate, general fertility rate, specific fertility rate, total fertility rate, measurement of population growth, gross reproduction rate, net reproduction rate. |
| Week 3 Numerical Methods: Difference tables, methods of interpolation, Newton’s formula for forward and backward interpolation with equal intervals |
| Week 4 Lagrange’s method of interpolation, Divided differences, numerical integration, General Quadrature formula for equidistant ordinates, Trapezoidal rule, Simpson’s one-third and three-eight formula.  |
| Week 5 Basic of Computer: Introduction, origin, development, uses and limitation of computers. Types of computers, computer structure, input-unit, CPU, output unit, secondary storage, High level and low level languages, compiler and interpreter.  |
| January Week 1 Computer Arithmetic: Floating point representation of numbers, arithmetic operations with normalized floating point numbers. Number systems- Binary, decimal, octal  |
| Week 2 Hexadecimal number systems and their conversions into each other. Binary arithmetic’s, (Addition, subtraction, multiplication & division).  |
| Week 3 Flow Charts and Algorithm: Concepts of flow chart, algorithm and programming. Flow charts and algorithms for the following: Mean, Standard Deviation,  |
| Week 4 Coefficient of Correlation, Straight line fitting. Trapezoidal rule, Simpson’s 1/3rd and 3/8th rules |
| Week 5 Revision and doubt class |
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