

GOVT. DEGREE COLLEGE BARAMULLA

(DEPARTMENT OF STATISTICS)

SEMESTER 2nd

CREDIT:04+02

MAJOR/MINOR COURSE (SYLLABUS)

BST22C201: STATISTICS (PROBABILITY AND PROBABILITY DISTRIBUTIONS)

Course outcomes: After completing this course a student will have:

- Ability to understand the concept of probability along with basic laws and axioms of probability.
- Ability to identify the appropriate method (i.e. union, intersection, conditional, etc.) for solving a problem.
- Ability to understand the concept of random variable (discrete and continuous), concept of probability distribution.
- Knowledge of discrete distributions. Discuss appropriate distribution negative binomial, Poisson, etc. with their properties and application of discrete distribution models to solve problems.
- Knowledge of continuous distributions. Discuss the appropriate distribution (i.e., uniform, exponential, normal, etc.) with their properties and application of continuous distribution models to solve problems.

THEORY (04 CREDITS)

UNIT-I

Introduction to Probability and Basic Concepts: Random experiment, Trial, Sample point and Sample space, Events, Operations of events, Concept of equally likely, mutually exclusive and Exhaustive events. Definition of Probability: Classical, Relative frequency and Axiomatic approaches. Discrete Probability Space, Properties of Probability under Set Theory Approach, Independence of Events, Additional Law of events. Conditional Probability, Multiplication Law of events, Independence of events. Prior and posterior probabilities. Bayes theorem and its applications.

UNIT-II

Random Variables – Discrete and Continuous, Probability Mass Function (pmf) and Probability density function (pdf), Cumulative distribution function (cdf). Marginal and Conditional distributions, Independence of random variables. Expectation of a random variable and its properties, Expectation of sum of random variables and product of independent random variables, Conditional expectation.

UNIT-III

Discrete Distributions: Moments, Moment generating function (m.g.f.) & its properties. Discrete Probability Distributions: Uniform distribution, Bernoulli distribution Binomial distribution, Poisson distribution (as limiting case of Binomial distribution), Hyper geometric, Geometric and Negative Binomial. (Mean, variance through moments and m.g.f of these distributions).

UNIT-IV: Continuous Probability Distributions: Uniform, Exponential, Gamma. Normal distribution and its properties, Standard Normal variate, Normal distribution as limiting case of Binomial distribution. (Mean, variance through moments m.g.f of these distributions).

References:

1. David, S. (1994): Elementary Probability, Cambridge University Press.
2. Dudewicz, E.J. and Mishra, S.N. (2008). Modern Mathematics Statistics, Wiley.
3. Gupta, S.C. and Kapoor, V.K. (2000). Fundamentals of Mathematical Statistics (10th ed.), Sultan Chand and Sons.
4. Hanagal, D. D. (2009). Introduction to Applied Statistics: A Non-Calculus Based Approach. Narosa Publishing Comp. New Delhi.
5. Houghton and Mifflin. Lipschutz, S., Lipson, M.L. and Jain, K. (2010). Schaum's Outline of Probability. 2nd Edition. McGraw Hill Education Pvt. Ltd, New Delhi.
6. Meyer, P. (2017). Introductory Probability and Statistical Applications (2nd ed.), New Delhi, Oxford & IBH Publishing Co. Pvt. Ltd.
7. Pitman, J. (1993). Probability. Narosa Publishing House.
8. Rothangi, V.K & Saleh, A.E. (2008). An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern Ltd.
9. Parzen, E.S. (1992). Modern Probability Theory and its applications. Wiley Inter science.
10. Statistical methods, by S.C. Gupta

PRACTICALS (02 CREDITS)

2. Computation of conditional probabilities based on Bayes theorem.
3. Fitting of Binomial distribution
4. Fitting of Poisson distributions.
5. Fitting of Normal distribution.
6. Computation of mean and variance through mgf.
7. Fitting of Negative Binominal Distribution.

References:

1. Gupta, S.C. and Kapoor, V.K. (2000). Fundamentals of Mathematical Statistics (10th ed.), Sultan Chand and Sons.
2. Hanagal, D. D. (2009). Introduction to Applied Statistics: A Non-Calculus Based Approach. Narosa Publishing Comp. New Delhi.
3. Rothangi, V.K & Saleh, A.E. (2008). An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern Ltd.
4. Parzen, E.S. (1992). Modern Probability Theory and its applications. Wiley Inter science.

Govt. Degree College Baramulla.
Department of Statistics
SEC (Skill Course)
FOR SEM-2nd (UG)

Title: Statistical Data Analysis-II Using SPSS

Code: BST22S202

Learning outcomes:

- To equip students with theoretical and analytical skills with the capability to understand and handle the dynamic of statistics in the business world.
- Students will have ability to express thoughts and ideas effectively in Statistical language.
- The students could develop Statistical reasoning to analyze and interpret socio economic data from a variety of sources.
- The students will be able to equipped themselves within depth SPSS software for statistical computing.

Credits: 2+2

Theory : 2 Max Marks:30

Practicals : 2 Max Marks: 30

Unit I

Skewness and Kurtosis: Computational techniques based on measure of Skewness and Kurtosis including those based on Quartiles. Computation of central and raw moments using data sets.

Unit II

Correlation and Regression Analysis: Scatter diagram, Test of Normality, Computational techniques for depicting relationship between variables using Simple correlation and rank correlation on different data sets .

Simple linear regression. Predication of dependent variable by use of value of independent variable with the help of the linear regression techniques.

Practicals:

Correlation and regression on SPSS. Rank Correlation and its interpretations.
Measures of Skewness and Kurtosis on SPSS.

References

1. Statistical Methods, By S.P Gupta, S Chand and Sons.
2. Data Analysis using SPSS, By Dr. Lalit Prasad and Dr. Priyanka Mishra, NIRALI publications.

3 Link : www.iasri.res.in

Govt. Degree College Baramulla
Department of Statistics
MULTIDISCIPLINARY COURSE (Syllabus)

CREDITS: 03

BST22M103: STATISTICS (BASIC STATISTICS)

Course outcomes: After completing this course a student will have:

- *Knowledge of Statistics, its scope and importance in various fields.*
- *Ability to understand concepts of samples. Population and difference between different types of data.*
- *Knowledge of methods for summarizing data sets, including common graphical tools (such as box plots, histograms and stem plots). Interpret histograms and box plots.*
- *Ability to describe data with measures of central tendency and measures of dispersion.*

UNIT-I

Introduction to Statistics and Basic Concepts:

Meaning, origin, definition, functions, limitations and applications of Statistics. Primary and secondary data, different methods of collection of primary data with merits and demerits. Sources of secondary data. Classification: meaning, objectives, types of classifications- Chronological, Geographical, Qualitative and Quantitative classifications with illustrations. Formation of discrete and continuous frequency distributions.

Tabulation: meaning, objectives and rules of tabulation, format of a statistical table and its parts. Types of table, examples of preparation of a blank table and tables with numerical information.

Diagrammatic Graphical representation of Data: Diagrams: Meaning, importance of diagrams and general rules of construction of diagrams. Types of Diagrams - simple, multiple, component, percentage bar diagrams and pie diagrams with simple illustrations.

Graphs: Types of Graphs-Histogram, frequency Polygon, frequency curve and ogives, simple problems, location of mode, median and partition values from the graphs. Difference between diagrams and graphs.

UNIT-II

Measures of Central Tendency:

Meaning of central tendency and essentials of a good measure of central tendency. Types of measures of central tendency: Arithmetic mean, Median, Mode, Geometric mean and Harmonic mean - definition, merits and demerits. Properties of arithmetic mean. Problems on both grouped and ungrouped data for all the measures.

UNIT-III

Measures of Dispersion:

Meaning and objectives of measures of dispersion. Essentials of a good measure of dispersion, absolute and relative measures of dispersion. Types of measures of dispersion- Range, Quartile deviation, Mean deviation and standard deviation with relative measures-definition, merits and demerits. Simple problem on ungrouped and grouped data.

References:

1. Gupta S.C. Fundamentals of Statistics, Himalaya Publishing House, Bombay
2. Mukhopadhyaya, P. Applied Statistics, New Central Book Agency (P) Ltd., Calcutta
3. Gupta S.P. and V.K Kapoor Fundamentals of Mathematical Statistics, Sultan Chand, New Delhi
4. Goon, A.M., Gupta, M.K. and Das Gupta, B. (2013). Fundamental of Statistics, Vol II, World Press, Kolkata.
5. Goon, A.M., Gupta, M.K. and Das Gupta, B. (2011). Fundamental of Statistics, Vol II, World Press, Kolkata.
6. Gupta, S.C. and Kapoor, V.K. (2000). Fundamentals of Mathematical Statistics (10th ed.), Sultan Chand and Sons.
7. Hanagal, D. D. (2009). Introduction to Applied Statistics: A Non-Calculus Based Approach. Narosa Publishing Comp. New Delhi.
8. Miller, I. and Miller, M. (2006). John E. Freund's Mathematical Statistics with Applications, (7th Edn.), Pearson Education, Asia.
9. Mood, A.M. Graybill, F.A. and Boes, D.C. (2011). Introduction to the Theory of Statistics, 3rd Edn., Tata McGraw-Hill Pub. Co. Ltd.
10. Weatherburn, C.E. (1961). A First Course in Mathematical Statistics, The English Lang. Book Society and Cambridge Univ. Press.