

J.S.S. BANASHANKARI ARTS, COMMERCE AND SHANTIKUMAR GUBBI SCIENCE COLLEGE, VIDYAGIRI, DHARWAD

Affiliated to Karnatak University, Dharwad

Accredited with 'A' Grade in last three cycles



Fourth Cycle NAAC Accreditation SELF STUDY REPORT (SSR)

CRITERION - I

1.2.1 (Q_nM)

STATISTICS (CBCS)



Submitted to
NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL, BENGALURU



KARNATAK UNIVERSITY, DHARWAD
ACADEMIC (S&T) SECTION
 ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಧಾರವಾಡ
 ವಿದ್ಯಾಮಂಡಳ (ಎಸ್&ಟಿ) ವಿಭಾಗ



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NAAC Accredited
 'A' Grade 2014

website: kud.ac.in

No. KU /Aca(S&T)/ RIH-290/CBCS/2020-21/ 315

Date: 13 AUG 2020

ಅಧಿಸೂಚನೆ

ವಿಷಯ: 2020-21ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಎಲ್ಲ ಸ್ನಾತಕ ಕೋರ್ಸುಗಳಿಗೆ 1 ಮತ್ತು 2ನೇ ಸೆಮಿಸ್ಟರ್ ಸಿ.ಬಿ.ಸಿ.ಎಸ್. ಮಾದರಿಯ ಪಠ್ಯಕ್ರಮವನ್ನು ಅಳವಡಿಸಿರುವ ಕುರಿತು.

- ಉಲ್ಲೇಖ: 1. DO No. 1-1/2016(SECY), dt. 10.08.2016.
 2. Academic Council Res. No. 2, 21.05.2020.
 3. KU/Aca(S&T)/RIH-194/20-21/71, dt. 08.06.2020.
 4. KU/VCS/2020-21, dt. 11.08.2020.
 5. ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಆದೇಶ ದಿನಾಂಕ 13.08.2020.

ಮೇಲ್ಕಾಣಿಸಿದ ವಿಷಯ ಹಾಗೂ ಉಲ್ಲೇಖಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ, 2020-21ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಎಲ್ಲ ಸ್ನಾತಕ ಕೋರ್ಸುಗಳ 1 ಮತ್ತು 2ನೇ ಸೆಮಿಸ್ಟರ್‌ಗಳಿಗೆ ಸಿ.ಬಿ.ಸಿ.ಎಸ್. ಮಾದರಿ ಪಠ್ಯಕ್ರಮವನ್ನು ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ಅನುಮೋದನೆಯನ್ನು (Pending Approval of Academic Council Meeting) ನಿರೀಕ್ಷೆಯಲ್ಲಿರಿಸಿ ಅಳವಡಿಸಲಾಗಿದೆ.

ಮುಂದುವರೆದು, ಈ ಮೇಲಿನ ಸಿ.ಬಿ.ಸಿ.ಎಸ್. ಪಠ್ಯಕ್ರಮವು ಕ.ವಿ.ವಿ. ಅಂತರ್ಜಾಲ www.kud.ac.in ದಲ್ಲಿ ಬಿತ್ತರಿಸಲಾಗಿದೆ ಎಂದು ಈ ಮೂಲಕ ತಿಳಿಸಲಾಗಿದೆ.

(Handwritten signature and date: 13/08/2020)
 (ಡಾ. ಹನುಮಂತಪ್ಪ ಕೆ.ಟಿ)
 ಕುಲಸಚಿವರು

ಗೆ,

ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಎಲ್ಲ ಅಧೀನ ಹಾಗೂ ಸಂಬಂಧಿತ ಮಹಾವಿದ್ಯಾಲಯಗಳ ಪ್ರಾಚಾರ್ಯರುಗಳಿಗೆ.

ಪ್ರತಿ ಮಾಹಿತಿಗಾಗಿ: ಡೀನರು, ಕಲಾ, ಸಮಾಜ ವಿಜ್ಞಾನ, ವಿಜ್ಞಾನ ಹಾಗೂ ತಂತ್ರಜ್ಞಾನ, ವಾಣಿಜ್ಯ, ಕಾನೂನು, ಶಿಕ್ಷಣ ಮತ್ತು ಮ್ಯಾನೇಜ್‌ಮೆಂಟ್ ನಿಖಾಯ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.

ಪ್ರತಿ:

1. ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕುಲಪತಿಗಳ ಕಾರ್ಯಾಲಯ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
2. ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕುಲಸಚಿವರ ಕಾರ್ಯಾಲಯ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
3. ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕುಲಸಚಿವರು(ಮೌಲ್ಯಮಾಪನ) ಕಾರ್ಯಾಲಯ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
4. ನಿರ್ದೇಶಕರು, ಇಂಟರನೆಟ್ ಸೆಕ್ಷನ್, ಪರೀಕ್ಷಾ ವಿಭಾಗ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
5. ಅಧೀಕ್ಷಕರು, ಸಿಡಿಪಿ (ಸಂಯೋಜನೆ) ವಿಭಾಗ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ

Discipline Specific Course (DSC) under CBCS

B.Sc. Semester – I

STATISTICS : STT:A

Descriptive Statistics and Elements of Probability

Unit I: Basics: Introduction, meaning, definition, functions, limitations, applications of statistics, variable, attribute, types of variables, types of data: Quantitative data and Qualitative data, cross-sectional and time series, discrete and continuous. Scales of measurement: nominal, ordinal, interval, ratio. Describing data with tables: formation of a uni-variate and bi-variate frequency distribution, marginal and conditional distributions, relative frequency distributions, cumulative frequency distributions. Describing data with graphs: Graphical presentation of a frequency distribution- Histogram, Frequency polygon, frequency curve and ogives.

(10 hours)

Unit II: Uni-Variate data Analysis: Describing data with averages: Measures of central tendency – Arithmetic mean, Geometric mean, Harmonic mean, Median & Mode. Definition, formulae, properties, merits and demerits. Describing positions: Measures of partition values – Quartiles, Deciles & Percentiles, definition, formulae. Describing Variability: Measures of dispersion – Absolute & relative measures, Range, Quartile Deviation, Mean Deviation and Standard Deviation, definition, formulae, properties, merits and demerits. Describing shape: Measures of Skewness: Meaning, need, types of skewness, absolute and relative measures, properties, Measures of Kurtosis: Need, types of kurtosis, measurement of kurtosis, properties, standard theoretical examples.(20 hours)

Unit III: Bi-Variate data Analysis: Describing Relationship: Correlation and Regression: Correlation: Definition, Types of correlation, Methods of measuring correlation, Scatter diagram, Correlation Coefficient for quantitative data: Prof. Karl Pearson's coefficient of linear correlation, its properties, Correlation Coefficient for qualitative data: Spearman's rank correlation coefficient, its properties, Simple regression analysis- regression equations by method of least squares, linear regression coefficients and its properties. Angle between the regression lines. (8 hours)

Unit IV: Multivariate data Analysis: Introduction: Yule's notations, distribution of two variables, distribution of three or more variables, primary and secondary subscripts, Plane of regression and its derivation, estimation of regression coefficients a and b in case of three variables, partial regression coefficient in terms of delta, Residual, properties of residuals, Standard deviation of residuals, Multiple and partial correlation, definition, derivation and their standard properties. (10 hours)

Unit V: Elements of Probability: Basic concepts: Random experiment, Sample space, Mutually exclusive, exhaustive, equally likely events, complimentary events, definition of probability: Classical, Statistical and Axiomatic, Addition, Multiplication and Conditional probability theorems with proofs, theoretical examples, with replacement and without replacement selection, Independent and dependent events, Bayes' theorem and its applications.

(12 hours)

STATISTICS LAB: STPr:A

Descriptive Statistics and Elements of Probability

Practicals based on theory using Excel and R-programming

The first 3 practicals are to become skilled at R-programming and R packages. Practical 4 to 13 has to be first solved manually then results should be verified using Excel and R-programming.

1. Demonstration of Installation of R-programming language, command line environment, overview of capabilities, brief mention of open source philosophy, of R Data Types and Variables in R, Operators in R, Loading data from a file: `read.table()` and `read.csv()`, writing data to a file.
2. Demonstration of Conditional Statements in R, Loops in R, R script, Functions in R and R packages.
3. Demonstration of Graphics in R: use of built-in functions `Plot()`, `lines()`, `abline()`, etc. Practice for drawing Barplot, Pie chart and Histogram. Box plot. Scatter plot.
4. Formation of a frequency distribution uni-variate frequency distributions, cumulative frequency distributions and bi-variate frequency distributions.
5. Graphical presentation of a frequency distribution.
6. Measures of Central Tendency- Mean and its properties, Weighted mean, Median, Mode, Geometric mean and Harmonic mean.
7. Partition values
8. Measures of Dispersion – Range, coefficient of range, Quartile deviation, coefficient of QD, Mean Deviation, coefficient of MD, Standard Deviation, Coefficient of Variation.
9. Correlation-Karl Pearson's correlation coefficient and Spearman's rank correlation coefficient.
10. Simple Regression.
11. Plane of Regression, Multiple and Partial Correlation.
12. Problems on probability.
13. Problems on Bayes' theorem

Books for Study:

1. Gupta, S.C. and Kapoor, V.K.: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. Kalyan Kumar Mukherjee: Probability and Statistics, New Central Book Agency (P) Ltd., Calcutta.
3. Bansilal & Arora, S.R.: Mathematics of Probability & Statistics, R. Chand & Co., New Delhi.
4. Chatterji, P.N.: Mathematical Statistics, Rajhans Prakashana Mandir, Educational Publishers, Meerut.
5. Ray & Sharma: Mathematical Statistics, Ram Prasad & Sons, Agra.
6. Dr. Goel, B.S., Prof. Satyaprakash and Dr. Roshan lal: Mathematical Statistics, Pragati Prakashana, Meerut.

Books for reference:

1. Robert V. Hogg and Allen T. Craig: Introduction to Mathematical Statistics (Fifth Edition), Pearson Education Inc, New Delhi.
2. Goon, A.M., Gupta, M.K. and Dasgupta, B.: Fundamentals of Statistics Volume I and II. The World Press Private Limited, Calcutta.
3. Mathai, A.M.: Introduction to Statistical Methods, MacMillan Company Ltd.,
4. Lindgren: Introduction to Probability & Statistics, MacMillan Publishers.
5. Rohatgi, V.K.: An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern Ltd., New Delhi.
6. Parzen: Modern Probability Theory & its Applications, Wiley Eastern.
7. A.M. Mood and Graybill: Introduction to the theory of Statistics.
8. Goon A.M., Gupta M.K. and Dasgupta B. : Basic Statistics.

Discipline Specific Course (DSC) under CBCS
B.Sc. Semester – II

STATISTICS : STT:B

Mathematical Expectation, Theoretical Distributions and Order Statistics

Unit I: Random Variable and Mathematical Expectation: Definition of a random variable, discrete & continuous, probability mass function, probability density function, distribution function and its properties, Marginal and conditional distributions, joint probability functions, independence of random variables, Transformation of Random Variables and Jacobian of transformation with illustrations, Mathematical expectation of a random variable, Addition theorem and Multiplication theorem on mathematical expectations.

(10 hours)

Unit II : Generating functions and their applications: Moments - raw and central moments and their interrelationships and properties, Moment generating functions, cumulant generating functions, probability generating functions and their applications, theorems associated with MGF, Chebyshev's inequality and its applications, Weak Law of Large Numbers.

(10 hours)

Unit III: Standard discrete distributions: Uniform, Bernoulli, Binomial, Poisson, Geometric, Negative Binomial, Hyper geometric distributions, definition, mean, variance, moments, moment generating functions, recurrence relation for probabilities and moments for binomial, Poisson, and Negative binomial distributions, additive property, Cumulant generating function, theoretical examples.

(15

Hours)

Unit IV: Standard Uni-variate continuous distributions: Rectangular, Beta, Gamma, and Exponential distributions, definitions through p.d.f's, Mean, variance, moments, recurrence relations, Additive property of exponential and gamma variates, Normal distribution and its properties, Cauchy distribution, Uni-variate and Bi-variate transformation of variables of discrete and continuous random variables.

(20 Hours)

Unit V: Order statistics: Definition of ordered statistic and their distributions, Derivation of first order statistic, highest order statistic, r^{th} order statistics, joint distribution of order statistics and their derivations, simple examples to obtain the distributions of order statistics.

(05 Hours)

STATISTICS LAB : STPr: B

Mathematical Expectation, Theoretical Distributions and order Statistics

Practicals based on theory using R-programming

The first 2 practicals are to become skilled at R-programming and R packages. Practical 3 to 13 have to be first solved manually then results should be verified using R-programming.

1. Demonstration of R functions to compute probabilities, cumulative probabilities, etc., for standard distributions.
2. Demonstration of MASS R package fitting standard distributions and use of the fitdistrplus R package for the same.
3. Bivariate Probability Distributions, Marginal & Conditional distributions, Conditional Mean, Conditional Variance, Correlation.
4. Transformation of discrete random variables.
5. Transformation of continuous random variables.
6. Problems on Mathematical Expectation.
7. Problems on Moments.
8. Application problems based on Standard Discrete Distributions-Binomial, Poisson, Negative Binomial.
9. Application problems based on Discrete Distributions-Geometric, Hyper-Geometric.
10. Fitting Standard Discrete Distributions: Binomial, Poisson, Geometric and Negative Binomial.
11. Application problems based on Standard continuous distributions.
12. To find the ordinate for a given area for normal distribution and Problems based on area property of normal distribution and Application problems based on Normal Distribution.
13. Fitting of Standard Continuous Distributions distribution.

Books for Study and Reference:

1. Gupta, S.C. and Kapoor, V.K.: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. Kalyan Kumar Mukherjee: Probability and Statistics, New Central Book Agency (P) Ltd., Calcutta.
3. Bansilal & Arora, S.R.: Mathematics of Probability & Statistics, R. Chand & Co., New Delhi.
4. Chatterji, P.N.: Mathematical Statistics, Rajhans Prakashana Mandir, Educational Publishers, Meerut.
5. Ray & Sharma: Mathematical Statistics, Ram Prasad & Sons, Agra.
6. Dr. Goel, B.S., Prof. Satyaprakash and Dr. Roshan Lal: Mathematical Statistics, Pragati Prakashana, Meerut.
7. Mukhopadhyaya, P. (1996). Mathematical Statistics. New Central Book Agency (P) Ltd., Calcutta.
8. Sundarapandian.V : Probability, Statistics and Queueing theory, PHI learning Private Limited, New Delhi.

Books for reference:

1. Robert V. Hogg and Allen T. Craig: Introduction to Mathematical Statistics (Fifth Edition), Pearson Education Inc, New Delhi.
2. Rohatgi, V.K.: An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern Ltd., New Delhi.
3. Lindgren: Introduction to Probability & Statistics, MacMillan Publishers.
4. Parzen: Modern Probability Theory & its Applications, Wiley Eastern.
5. A.M. Mood and Graybill: Introduction to the theory of Statistics.
6. Mathai, A.M.: Introduction to Statistical Methods, MacMillan Company Ltd, India.
7. John E Freund: Mathematical Statistics (Sixth Edition), Pearson Education (India), New Delhi.
8. Probability and Statistical Inference: R.V.Hogg, E. A.Tannis, Third Edition; Collier McMillan Publishers.

Discipline Specific Course (DSC) under CBCS

B.A. Semester – I

APPLIED STATISTICS : AST:A

Basic Statistics

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. Definition of some important terms - class, class limits, class intervals, width of class interval, open-end classes, inclusive and exclusive classes. 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 .

(15 Hours)

Unit II. Diagrammatic and 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.

(10 Hours)

Unit III. 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. Empirical relation between mean median and mode. Problems on both grouped and ungrouped data for all the measures.

Partition values-definition and types of partition values: quartiles, deciles and percentiles. Problems on Quartiles for grouped ungrouped data only.

(15 Hours)

Unit IV. 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. Properties of Standard deviation, simple problems on ungrouped and grouped data.

(15 Hours)

Unit V. Skewness and Kurtosis:

Skewness- Definition, objectives and types of skewness, explanation of positive and negative skewness with diagrams. Measures of skewness- Karl Pearson's coefficient of skewness and Bowley's coefficient of skewness. Simple problems.

Kurtosis : Definition and types of kurtosis. Explanation of types of kurtosis with neat diagrams. Measure of skewness based on moments. Difference between skewness and kurtosis.

(05 Hours)

Books for Study :

1. Gani S. G., Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.
2. Gupta S. C. Fundamentals of Statistics, Himalaya Publishing House, Bombay
3. Gudaganavar S. V., Gudaganavar N. V. and Gudaganavar R. S., Business Statistics, Anupama Publication, Ramadurga

Books for Reference:

1. Gupta S. P., Statistical Methods, Himalaya Publishing House, Bombay
2. Mukhopadhaya, 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

Discipline Specific Course (DSC) under CBCS

B.A. Semester – II

APPLIED STATISTICS : AST:B

Bivariate Analysis, Theory of Probability and Index Number

Unit I. Correlation:

Definition and meaning of correlation, types of correlation- positive, negative, linear and non-linear correlation with examples. Uses of correlation. Methods of studying correlation- Scatter diagram, Karl Pearson's coefficient of correlation and Spearman's Rank correlation coefficient. Properties of Karl Pearson coefficient of correlation. Simple problems based on ungrouped data. **(10 Hours)**

Unit II. Regression:

Definition of regression, regression equation of X on Y and Y on X, Properties of regression co-efficient and regression lines. Problems based on ungrouped data. Comparison between correlation and regression. **(08 Hours)**

Unit III. Theory of Probability:

Introduction to probability, Basic concepts: Random experiment, Sample space, Mutually exclusive, exhaustive, equally likely events, complimentary events, classical, statistical and axiomatic definition of probability, properties, Addition theorem of Probability and Definition of independent, dependent events, Conditional probability, Multiplication theorem of Probability without proof. Simple numerical problems. **(15 Hours)**

Unit-IV. Random Variable

and Mathematical Expectation:

Definition of a random variable, discrete & continuous random variable, probability mass function, probability density function, distribution function. Definition of mathematical expectation, expected mean and variance of discrete random variable. Properties of Mathematical expectation. Statement of addition and multiplication theorem of expectation. Numerical problems on mathematical expectation. **(15 Hours)**

Unit-V. Index Numbers:

Definition, uses and limitations of index numbers. Problems involved in the construction of index numbers, methods of constructing index numbers of price and quantities, simple aggregate and price relatives method, weighted aggregate and weighted average of relatives method, important types of weighted index numbers: Laspeyre's, Paasche's, Bowley's, Marshall-Edgeworth, Fisher's, method of obtaining price and quantity index numbers, tests of a consistency of a index number-Unit test, Time reversal test, Factor reversal test and Circular test. Verification of index numbers satisfying the time reversal and factor reversal tests. Problems on index numbers.

Consumer price index number: Problems involved in the construction of cost of living index number, uses, advantages and limitations, method of aggregative expenditure method and family budget method for the construction of consumer price index numbers.

(12 Hours)

Books for Study :

1. Gani S. G., Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.
2. Gupta S. C. Fundamentals of Statistics, Himalaya Publishing House, Bombay
3. Gudaganavar S. V., Gudaganavar N. V. and Gudaganavar R. S., Business Statistics, Anupama Publication, Ramadurga

Books for Reference:

1. Gupta S. P., Statistical Methods, Himalaya Publishing House, Bombay
2. Mukhopadhaya, 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

KARNATAK UNIVERSITY, DHARWAD
DEPARTMENT OF STATISTICS

Discipline Specific Course (DSC) under CBCS

B.A Semester – I

ELEMENTS OF MATHEMATICS AND STATISTICS : EMS A

Progression, Straight Line and Basic Statistics

SECTION 1 (MATHEMATICS)

Unit-I Logarithms and Progression :

Definition, Laws of logarithms, Change of base and Numerical problems. Brief recall of A.P. from earlier classes. Definition of G.P., H.P., nth term of G.P., H.P. Sum to n terms of G.P. (with proof)-problems. Sum to infinity to a G.P.-problems, A.M., G.M. and H.M. of two numbers and their relations-problems
(18 Hours)

Unit-II Straight Lines :

recall of 2-D from earlier classes. Slope of a line, Slopes of parallel and perpendicular lines, Collinearity of two points and problems. Various forms of equations of a line
(12Hours)

Brief

SECTION 2 (STATISTICS)

Unit-III 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. Definition of some important terms - class, class limits, class intervals, width of class interval, open-end classes, inclusive and exclusive classes. 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
(15 Hours)

Unit-IV Diagrammatic and 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.

(15 Hours)

Books for Study :

4. D.C. Pavate., Modern College Algebra, Macmillan and Co.
5. Gani S. G., Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.
6. Gupta S. C. Fundamentals of Statistics, Himalaya Publishing House, Bombay
7. Gudaganavar S. V., Gudaganavar N. V. and Gudaganavar R. S., Business Statistics, Anupama Publication, Ramadurga.

Books for Reference:

4. N. Rudraiah and Others: College Mathematics for B.Sc Series I and II SBS Publication Co. Bangalore.
5. Shanti Narayan, Analytical Solid Geometry-S. Chand & Co.
6. Gupta S. P., Statistical Methods, Himalaya Publishing House, Bombay
7. Mukhopadhaya, P. Applied Statistics, New Central Book Agency (P) Ltd., Calcutta
8. Gupta S P. and V K Kapoor Fundamentals of Mathematical Statistics, Sultan Chand, New Delhi

Discipline Specific Course (DSC) under CBCS

B.A Semester – II

ELEMENTS OF MATHEMATICS AND STATISTICS : EMS B

Partial Fractions, Trigonometric Functions and Univariate Data Analysis

SECTION 1 (MATHEMATICS)

Unit-I Partial Fractions :

Rational fractions, proper and improper fractions, Reduction of an improper fraction into a sum of a polynomial and a proper fraction-problems. Rules for resolving a proper fraction into partial fractions-problems
(10 Hours)

Unit-II Trigonometric Functions:

Recapitulation of basic Definitions of trigonometric functions. Signs of trigonometric functions and sketch of their graphs. Trigonometric functions of sum and difference of two angles. Trigonometric ratios of multiple angles(Simple problems)
(20 Hours)

SECTION 2 (STATISTICS)

Unit-III 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. Empirical relation between mean median and mode. Problems on both grouped and ungrouped data for all the measures.

Partition values-definition and types of partition values: quartiles, deciles and percentiles. Problems on Quartiles for grouped ungrouped data only. (15 Hours)

Unit-IV 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. Properties of Standard deviation, simple problems on ungrouped and grouped data.
(15 Hours)

Books for Study :

1. D.C. Pavate., Modern College Algebra, Macmillan and Co.
2. Gani S. G., Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.
3. Gupta S. C. Fundamentals of Statistics, Himalaya Publishing House, Bombay
4. Gudaganavar S. V., Gudaganavar N. V. and Gudaganavar R. S., Business Statistics, Anupama Publication, Ramadurga

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1. N. Rudraiah and Others: College Mathematics for B.Sc Series I and II SBS Publication Co. Bangalore.
2. Gupta S. P., Statistical Methods, Himalaya Publishing House, Bombay
3. Mukhopadhaya, P. Applied Statistics, New Central Book Agency (P) Ltd., Calcutta
4. Gupta S P. and V K Kapoor Fundamentals of Mathematical Statistics, Sultan Chand, New Delhi