B.L.D.E. ASSOCIATION'S
S.B. ARTS AND K.C.P. SCIENCE COLLEGE, VIJAYAPUR
RE-ACCREDITED AT THE 'B^{++}' LEVEL
Bachelor of Science
Department of Statistics
PROGRAM OUTCOMES (2023-24)

POs	DESCRIPTIONS
PO1:	Acquire fundamental/systematic or coherent understanding of the academic field of Statistics and its different learning areas and applications.
PO2:	Develop and demonstrate an ability to understand major concepts in various disciplines of Statistics
PO3:	Demonstrate the ability to use skills in Statistics and different practicing areas for formulating and tackling Statistics related problems and identifying and applying appropriate principles and methodologies to solve a wide range of problems associated with Statistics
PO4:	Understand procedural knowledge that creates different types of professionals related to subject area of Statistics, including professionals engaged in government/public service and private sectors
PO5:	Plan and execute Statistical experiments or investigations, analyze and interpret data/information collected using appropriate methods, including the use of appropriate statistical software including programming languages, and report accurately the findings of the experiment/investigations.
PO6:	Have a knowledge regarding use of data analytics tools like Excel and R-programming.
PO7:	Developed ability to critically assess a standard report having graphics, probability statements.
PO8:	Analyze, interpret the data and hence help policy makers to take a proper decision.
PO9:	Recognize the importance of statistical modeling and computing, and the role of approximation and mathematical approaches to analyze the real problems using various statistical tools.

PO10:	Demonstrate relevant generic skills and global competencies such as (i) Problem-solving skills that are required to solve different types of Statistics related problems with well-defined solutions, and tackle open-ended problems, that belong to the disciplinary-area boundaries; (ii) Investigative skills, including skills of independent thinking of Statistics-related issues and problems; (iii) Communication skills involving the ability to listen carefully, to read texts and reference material analytically and to present information in a concise manner to different groups/audiences of technical or popular nature; (iv) Analytical skills involving paying attention to details and ability to construct logical Arguments using correct technical language related to Statistics and ability to translate them with popular language when needed; ICT skills (v) Personal skills such as the ability to work both independently and in a group.
PO11:	Undertake research projects by using research skills- preparation of questionnaire, conducting national sample survey, research projects using sample survey, sampling techniques.
PO12:	Understand and apply principles of least squares to fit a model to the given data, study the association between the variables, applications of Probability Theory and Probability Distributions

H.O.D.
Depart.nent of Statistics
BLDEA's S. B. Arts & K.C.P.
Sci. College, Vijayapur.

IQAC, Co-ordinator
S.B.Arts & K.C.P.Science College
Vijayapur.

Principal,
S.B. Arts and KCP Science College
VIJAYAPUR

Course outcomes

CLASS	PAPER	COURSE OUTCOMES	DESCREPTIONS
B. SC. I SEM	descriptive Statistics (Theory)		This course will enable the students to
		CO1	Understanding the fundamental concepts of statistics.
		CO2	Diagrammatic and Graphical representation
		CO3	Evaluation of Measures of Dispersion and Location.
		CO4	Measures of Skewness
		CO5	Using Multivariate data students will learn multiple correlation and partial correlation and multiple and linear regressions.
	Theory based Practical's on Descriptive Statistics	CO1	Understand the computation of frequency distribution for both classified and unclassified data.
		CO2	Interpretation of data using diagrams and graphs.
		CO3	Computation of Arithmetic mean, geometric mean, harmonic mean for unclassified and classified data.
		CO4	Computation median and mode for unclassified and classified data
		CO5	Computation of measures of dispersion for classified and unclassified data
		CO6	Student will learn the computation of skewness and kurtosis

		CO7	Students will learn computation of multiple and partial correlation and multiple and linear regressions
	Statistical Methods (OEC)	CO1	Acquire knowledge of statistical methods.
		CO2	Identify types of data and visualization, analysis and interpretation.
		CO3	Know about elementary probability and probability models.
		CO4	Employ suitable test procedures for given data set.
B. SC. II SEM	Probability and Distributions (Theory)	CO1	Student will learn the concept of Evaluation of chance of occurrence of an event through probability.
		CO2	Student will learn the concept of random variables and mathematical expectation.
		CO3	Students will learn about the standard distribution.
		CO4	Students will learn about the data analysis using R
	Theory based Practical's on Probability and Distributions	CO1	Students will learn the probability concept through problems.
		CO2	Student will learn the random variables and mathematical expectation through problems.
		CO3	Student will learn about the standard distribution.
		CO4	Students will learn about the data analysis using R.
	Business Statistics (OEC)	CO1	Frame and formulate management decision problems.
		CO2	Understand the basic concepts underlying quantitative analysis.
		CO3	Use sound judgment in the applications of quantitative methods to management decisions.

B. SC. III SEM	Calculus and Probability Distributions (Theory)	CO1	Judge continuity of a function, find integrations and solve problems of differentiability..
		CO2	Solve problems of various analytical environments using different distributions and their properties.
		CO3	Find sampling distributions of functions of random variables and explore their applications.
	Theory based Practical's on Calculus and Probability Distributions	CO1	Practical knowledge of handling various types of R-functions for calculus and probability distributions.
		CO2	Practical knowledge of carrying out numerical analysis.
		CO3	The knowledge of simulating random observations from various probability distributions using R-programming.
	Population Studies (OEC)	CO1	Study the concepts of Vital Statistics, sources of data, different measures of Fertility, Mortality and migration.
		CO2	Understand the Growth rates- GRR and NRR and their interpretations.
B. SC. IV SEM	Statistical Inference-I (Theory)	CO1	Carryout statistical analysis by identifying families of distributions and the use of order statistics.
		CO2	To find estimators using different methods of estimation and compare estimators.
		CO3	To carryout statistical inference using different tests of hypotheses under different scenarios.
	Theory based Practical's	CO1	Practical knowledge of computing the estimates and test statistics using R.

	on Statistical Inference-I	CO2	Practical knowledge of carrying out statistical inference with different tests of hypotheses.
		CO3	Practical knowledge on carrying out MP and UMP tests using R.
B. SC. V SEM	Matrix Algebra and Regression analysis-I (Theory)	CO1	Demonstrate and understanding of basic concepts of matrix algebra, including determinants, inverse and properties of varies types of matrices.
		CO2	Apply matrix algebra and linear algebra techniques to solve systems of linear equations, determine the rank of matrix, understanding quadratic forms and their applications in statistics, characteristics root and vectors.
		CO3	Develop and understanding simple and multiple regression models, including the assumptions underlying these models, techniques for inference and hypothesis testing and diagnostics checks and corrections.
		CO4	Apply regression analysis techniques to real world data sex
	Theory based Practical's on Matrix Algebra and Regression analysis-I	CO1	competitions of rank,inverse and eigen values of higher order matrix.
		CO2	linear regression model in Matrix for and model evaluation with software.
		CO3	Identify situation where linear regression is appropriate.
		CO4	Build and fit linear regression model with software.
		CO5	Interpreter estimates and diagnostic statistics.
		CO6	Produce exploratory graphs
	Analysis of variance	CO1	Can learn Exploratory Data Analysis(EDA) basic for ANOVA appropriate data.

	and Design of experiments - II (Theory)	CO2	Learn fixed and random effect models and one way and two way classified data.
		CO3	Understand different designs (CRD,RBD, LSD) and machine plot techniques.
		CO4	Understand the different factorial experiments.
		CO5	Develop complete and practical confounding for factorial experiments.
	Theory based Practical's on Analysis of variance and Design of experiments - II	CO1	Learn Perform basic competitions of ANOVA with R programming and interpret the results.
		CO2	Carry out the Turkey pirwaise mean comparison method and Learn about the other pairwise mean comparison methods with R programming.
		CO3	Construct evaluate an appropriate statistical method (CRD,RBD,LSD,etc.) in order to answer important scientific or business related questions with R programming.
		CO4	Sketch and interpret bar graph and line graphs showing the results of studies with simple factorial designs with statistical software's.
		CO5	Perform analysis to distinguish between main effect and simple effects with Statistical software's and recognize when an analysis of simple effects is required.
		CO6	Analysis confronting, Partial and Total confonding in factorial experimental with Statistical softwares
B. SC. VI SEM	Statistical Inference-II (Theory)	CO1	Understand expected loss, decision rules, decision principles and Bayes and minimax decision rules.
		CO2	Learn about UMP test,MLR property and likelihood ratio tests.

		CO3	Explore about sequential inference.
		CO4	Learn about one sample and two sample non parametric tests.
	Theory based Practical's on Statistical Inference-II	CO1	Construct UMP test for some discrete and continuous distribution.
		CO2	Construct sequential probability ratio tests for some discrete and continuous distribution
		CO3	Draw OC and ASN curves.
		CO4	CO4 Know some important non parametric tests.
	Sampling Methods, Official Statistical and Econometrics.	CO1	Understand the principle underlying sampling as a mean of making inference about a population.
		CO2	Understand the difference between probability and non-probability sampling
		CO3	Understand different sampling techniques.
		CO4	To learn to estimate population parameters from sample
		CO5	Understand official statistical system in India and their functions.
		CO6	Understand the role statistics in national development.
	Theory based Practical's on Sampling Methods, Official Statistical	CO1	To select a simple random sample with and without replacement from a finite population and estimation of the mean and total and the standard error of the estimator.
		CO2	CO2: To select a stratified random sampling and systematic sampling from a finite population and estimation of the mean and total and the standard error of the estimators.

	and Econometrics	CO3	CO3. Estimation of the proportion, total and the standard errors of the estimators based on a random sample under SRSWR and SRSWOR.
		CO4	CO4: Compute and analyse multiple linear regression model with R-codes by addressing the consequence of multicollinearity and diagnostic of multicollinearity
		CO5	Compute and analyse Multiple linear regression model with R-codes by addressing the consequences of autocorrelation and heteroscedasticity
B. SC. VI SEM	Data Science Internship	CO1	Accountable for individual and term responsibilities and deliverables.
		CO2	Exercise the ability to compromise and problem solve with involved parties
		CO3	Apply computing theory, language, and algorithms, as well as mathematical and statistical models, and the principles of optimization ti appropriately formulate and use data analyses
		CO4	Formulate and use appropriate models of data analysis tolls to solve hidden solutions to business-related challenges
		CO5	Interpret data findings effectively to any audience, orally, visually, and in written formats.

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