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Dr. V. S. KRISHNA GOVERNMENT DEGREE COLLEGE

Affiliated to Andhra University

NAAC Reaccredited with "A" Grade Institution.

VISAKHAPATNAM 530 013. A.P. INDIA

DEPARTMENT OF STATISTICS.

**Dr. V. S. Krishna Govt. Degree College(A)
Visakhapatnam**

DEPARTMENT OF STATISTICS

PROPOSED SYLLABUS FOR STATISTICS

IN UNDERGRADUATE DEGREE PROGRAMME

UNDER AUTONOMY

(With effect from 2020-21)

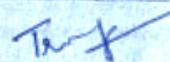
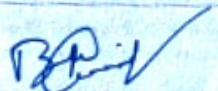
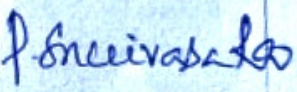
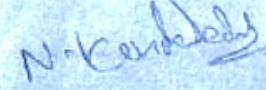
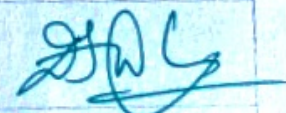
Dr.V.S.Krishna Govt. Degree College (Autonomous), Visakhapatnam

Resolutions/Minutes of the 6th Board of Studies 28th January- 2021

Subject: Statistics

Department: Statistics

In pursuance of conferment of Autonomous status to Dr.V.S.Krishna Govt. Degree College(A), Visakhapatnam by the UGC vide letter No.F22 1/2011(AC) dated 20.07.2011 from Dr. Manju Singh, Joint Secretary, UGC, New Delhi and Proceedings No. C-II (CDC) /Dr.VSK.Govt.College/BOS/2020 dt.19.03.2020 of The Vice-Chancellor, Andhra University, Visakhapatnam, the 6th Board of Studies in Statistics Subject is conducted on 28/01/2021 at 10:00 AM with the following members. The Changes will be implemented from 2020-21 academic year onwards.

MEMBER	NAME& DESIGNATION	SIGNATURE
Head of the Department (Chairman)	Ms. Triveni Domada (I/C)	
Faculty Members	1. 2.	
Subject Expert (University Nominee)	Prof. B.Muniswamy, Department of Statistics, Andhra University, Visakhapatnam.	
Subject Experts (from outside the parent university)	Dr.P.Srinivasa Rao, Asst.Professor, G.V.P.College for Degree and P.G College (A). Visakhapatnam.	
	Dr. N. Konda reddy, Associate Professor, K.L.University Vijayawada.	
Representative Member From Industry / Corporate / Allied Area relating to placement		
Member from Alumni	Dr.CH.V.M.K.Hari	
Coordinator, Academic Council	Dr.D.Sravan Kumar, Academic Coordinator	
Chairperson, Academic Council	Dr.V.Chandra Sekhar Principal	

**Dr. V. S. KRISHNA GOVT. DEGREE COLLEGE (A),
VISAKHAPATNAM**

DEPARTMENT OF STATISTICS

BOARD OF STUDIES RESOLUTIONS 2020 – 2021 (MINUTES OF THE MEETING)

BOS RESOLUTIONS ADOPTED

The Board of Studies of the Department of STATISTICS met on **28.01.2021 at 11.00AM** under the Chairmanship of Dr. V. Chandra Sekhar and resolved the following:

- 1) To adopt Choice Based Credit System as per the Staff Councils proceedings commencing from the academic year 2020 – 2021 for the admitted 1st Year Degree students' batch of 2020 – 2021.
- 2) To approve and introduce the newly framed syllabus (modified and approved by the BOS) for the 1st Year B.Sc. Degree course in Statistics. The newly framed syllabus is oriented in such a fashion that it caters to the needs of the students and to meet the present-day job employability and to develop professionalism in the field of Statistics.
- 3) To approve and ratify the 1st and 2nd Year Statistics syllabus for the batch admitted in 2020 -2021.
- 4) To ratify and introduce the semester mode pattern of examinations for the 1st Year students (M.St.Cs. group). Further it is approved and ratified the model question papers submitted by the concerned faculty members for 1st, 2nd, 3rd, 4th semesters. Out of 100 marks in each semester, 75 marks are for theory external examination and 25 marks for internal assessment of which 20 marks are provided for evaluation of conducting and taking average of two mid semester examinations and 5 marks are fixed for assignments/ Viva-Voce. Practical examinations will be conducted by the external examiners, at the end of each academic year for 100 marks.
- 5) To conduct seminars, workshops, symposia, field visits and organising exhibitions etc., to inculcate and create new ideology among the students.
- 6) To encourage students to take up independent research projects at their level by providing facilities.
- 7) To adopt NAAC norms by introducing quality circles among student community.

- 8) To develop infrastructure facilities in the department and implement guidelines of the Academic Council.
- 9) To take up innovative teaching (ICT mode of teaching) and evolve techniques that are easily understanding by the students and conduct remedial coaching to the below average students.
- 10) It is also resolved to establish a well-maintained laboratory for the practical purpose.
- 11) To encourage students to join JKC to equip with communication skills and improve their personality development.
- 12) To encourage students to participate in the community development activities such as Haritha Krishna Eco Club, NCC and NSS.
- 13) To reflect the changes in syllabus, blue print and question paper pattern if any.

Signed and approved by



Prof. B. Muniswamy

Subject Expert

(University Nominee)



Dr. V. Chandra Sekhar

Chairperson/Principal



Dr. D. Sravan Kumar

Academic Coordinator



Ms. Triveni Domada

Department Of Mathematics (I/C)



Dr. P. Srinivasa Rao .

Subject Expert



Dr. N. Konda reddy

Subject Expert



Koneru Lakshmaiah Education Foundation

(Deemed to be University established under 3 of the UGC Act, 1956)

Campus: Green Fields, Vaddewaram, Guntur District, Andhra Pradesh, India. PIN 522 502
Phone No: 0863 - 2577715 | www.kluniversity.in

K
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E
F

From

Dr. N. Kondareddy,
Associate Professor
Department of Statistics
KI University

To

The Principal
Dr. V.S. Krishna Govt Degree College (A)
Visakhapatnam

Respected Sir,

I would like to express my sincere gratitude for appointed me as an external university subject expert. On 28 Jan 2021 at 10.30 AM attended the Board of Studies (BOS) meeting in the subject statistics.

Thanking you,

Yours Sincerely

N. Kondareddy
(N KONDA REDDY)



EXALTING EDUCATION, EPITOMISING EXCELLENCE

Admin. Office: 29-36-38, Museum Road, Govermentpet, Vijayawada, Andhra Pradesh, India. PIN 520 002

Phone No. +91 - 866 - 2577715 | Fax: +91 - 866 - 2577717

28/1/21

From

Dr. N. Kondareddy,
Asso. prof in mathematics,
KLU.

To

The Principal

Dr. V.S. Krishna Govt Degree College (A)
Visakhapatnam,

Respected Sir/madam,

I would like to express my sincere

gratitude for appointing me as external university sub

expert. On 28/1/2021 at 10.30 Am attended the BOS meet

in the subject, statistics along with eminent personal

to share ideas for necessary modifications.

Thanking you,

Yours Sincerely
N. Kondareddy

Dr. V. S. KRISHNA GOVT. DEGREE COLLEGE (A), VISAKHAPATNAM.

B.A. / B.Sc. STATISTICS

REVISED SYLLABUS FOR CORE COURSES

CBCS / SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

CORE COURSES STRUCTURE

(Sem-I to Sem-IV)

Year	Semester	Paper	Subject	IA	EA	Total
1	I	I	Descriptive Statistics	25	75	100
	II	II	Probability Theory and Distributions	25	75	100
2	III	III	Statistical Inference	25	75	100
	IV	IV	Sampling Techniques and Design of Experiments	25	75	100
		V	Applied Statistics	25	75	100

OBJECTIVE OF THE COURSE

Statistics is a key to success in the field of science and technology. Today, the students need a thorough knowledge of fundamental basic principles, methods, results and a clear perception of the power of statistical ideas and tools to use them effectively in modeling, interpreting and solving the real life problems. Statistics plays an important role in the context of globalization of Indian economy, modern technology, computer science and information technology.

The main objectives of the course are

- To build the basis for promoting theoretical and application aspects of statistics.

- To underline the statistics as a science of decision making in the real life problems with the description of uncertainty.
- To emphasize the relevance of statistical tools and techniques of analysis in the study of interdisciplinary sciences.
- To acquaint students with various statistical methods and their applications in different fields.
- To cultivate statistical thinking among students.
- To develop skills in handling complex problems in data analysis and research design.
- To prepare students for future courses having quantitative components.

This course is aimed at preparing the students to cope with the latest developments and compete with students from other universities and put them on the right track.

Dr. V. S. KRISHNA GOVT. DEGREE COLLEGE (A), VISAKHAPATNAM.

COURSE - I

CBCS / SEMESTER SYSTEM

B.A. / B.Sc. STATISTICS (w.e.f. 2020-21 Admitted Batch)

DESCRIPTIVE STATISTICS

SYLLABUS

Course Outcomes:

After successful completion of this course, student will be able to

- Know about the role of statistics in different fields with special reference to business and economics.
- Get the knowledge of measures of dispersion.
- Basic idea of probability.
- Get the knowledge of Random Variable, Mathematical Expectation

Credits = 5 (theory 4+ practical 1)

Course syllabus:

UNIT-I

Introduction to Statistics: Importance of Statistics. Scope of Statistics in different fields. Various statistical Organisations in India and their functions for societal developments. Concepts of primary and secondary data. Diagrammatic and graphical representation of data: Histogram, frequency polygon, Ogives, Pie. Measures of Central Tendency: Mean, Median, Mode, Geometric Mean and Harmonic Mean. Median and Mode through graph.

UNIT-II

Measures of Dispersion: Range, Quartile Deviation, Mean Deviation and Standard Deviation, Variance. Central and Non-Central moments and their interrelationship. Sheppard's correction for moments. Skewness and kurtosis.

UNIT-III

Introduction to Probability: Basic Concepts of Probability, random experiments, trial, outcome, sample space, event, mutually exclusive and exhaustive events, equally likely and favourable outcomes. Mathematical, Statistical, axiomatic definitions of probability. Conditional Probability and independence of events, Addition and multiplication theorems of probability for 2 and for n events. Boole's inequality and Baye's theorem and its applications in real life problems.

UNIT-IV

Random variable: Definition of random variable, discrete and continuous random variables, functions of random variable. Probability mass function. Probability density function, Distribution function and its properties. Simple Problems for given pmf, pdf. Bivariate random variable - meaning, joint, marginal and conditional Distributions, independence of random variables and simple problems.

UNIT-V

Mathematical expectation: Mathematical expectation of a random variable and its Properties function of a random variable. Moments and covariance using mathematical expectation with examples. Addition and Multiplication theorems on expectation. Definitions of M.G.F, C.G.F, P.G.F, C.F and their properties. Chebyshev and Cauchy - Schwartz inequalities.

Text Books:

1. V.K.Kapoor and S.C.Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. BA/BSc I year statistics - descriptive statistics, probability distribution - Telugu Academy - Dr M.Jaganmohan Rao, Dr N.Srinivasa Rao, Dr P.Tirupathi Rao, Smt.D.Vijayalakshmi.
3. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI

Reference books:

1. Willam Feller: Introduction to Probability theory and its applications. Volume -I, Wiley
2. Goon AM, Gupta MK, Das Gupta B: Fundamentals of Statistics, Vol-I, the World Press Pvt.Ltd., Kolakota.
3. Hoel P.G: Introduction to mathematical statistics, Asia Publishinghouse.
4. M. JaganMohan Rao and Papa Rao: A Text book of Statistics Paper-I.
5. Sanjay Arora and Bansilal: New Mathematical Statistics: Satya Prakashan, New Delhi

Practicals -Course - I

1. Graphical presentation of data (Histogram, frequency polygon, Ogives).
2. Diagrammatic presentation of data (Bar and Pie). Construction on Ogive curves
3. Computation of measures of central tendency (Mean, Median, Mode, Geometric Mean and Harmonic Mean)
4. Computation of measures of dispersion (Q.D, M.D, S.D and Coefficient of variation)
5. Computation of non-central, central moments, β_1 and β_2 for ungrouped data.
6. Computation of non-central, central moments, β_1 and β_2 and Sheppard's corrections for grouped data.
7. Computation of Karl Pearson's coefficients of Skewness and Bowley's coefficients of Skewness.
8. Problems on Addition theorem of probability.
9. Problems on Multiplication theorem of probability.
10. Problems on Baye's theorem.
11. Computation of Descriptive Statistics using Mathematical Expectation (Discrete Series).
12. Computation of Descriptive Statistics using Mathematical Expectation (Discrete Series).

Note: Training shall be on establishing formulae in Excel cells and derive the results. The excel output shall be exported to MS word for writing inference.

Dr.V.S.KRISHNA GOVT.DEGREE COLLEGE (A), VISAKHAPATNAM.

COURSE-II

CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. STATISTICS

PROBABILITY THEORY AND DISTRIBUTIONS

Course Outcomes:

After successful completion of this course, student will be

- Distinguish between random and non-random experiments,
- Get the knowledge to conceptualize the probabilities of events including frequenters and axiomatic approach. Simultaneously, they will learn the notion of conditional probability including the concept of Bayes' Theorem,
- Relate to concept of discrete and continuous random variables and their probability distributions including expectation and moments,
- Knowledge of important discrete and continuous distributions such as Binomial, Poisson, Geometric, Negative Binomial and Hyper-geometric, normal, uniform, exponential, beta and gamma distributions,
- Acumen to apply standard discrete and continuous probability distributions to different situations.

Credits = 5 (theory 4+ practical 1)

Course Syllabus:

UNIT-I

Discrete Distributions: Binomial, Poisson, Negative Binomial, Geometric distributions: Definitions, means, variances, M.G.F, C.F, C.G.F, P.G.F, additive property if exists. Poisson approximation to Binomial distribution. Hyper-geometric distribution: Definition, mean and variance.

UNIT - II

Continuous Distributions: Rectangular, Exponential, Gamma, Beta Distributions: mean, variance, M.G.F, C.G.F, C.F. **Normal Distribution:** Definition, Importance, Properties, M.G.F, CF, additive property.

UNIT III

Curve fitting: Bi- variate data, Principle of least squares, fitting of degree polynomial. Fitting of straight line, Fitting of Second degree polynomial or parabola, Fitting of power curve and exponential curves.

UNIT-IV

Correlation: Meaning, Types of Correlation, Measures of Correlation: Scatter diagram, Karl Pearson's Coefficient of Correlation, Rank Correlation Coefficient (with and without ties), Concept of multiple and partial correlation coefficients (three variables only) and properties

Regression: Concept of Regression, Linear Regression, Regression lines, Regression coefficients and it's properties. Correlation vs regression.

UNIT-V

Attributes: Notations, Class, Order of class frequencies, Ultimate class frequencies, Consistency of data, Conditions for consistency of data for 2 and 3 attributes only, Independence of attributes, Association of attributes and its measures, Relationship between association and colligation of attributes, Contingency table: Square contingency, Mean square contingency, Coefficient of mean square contingency, Tschuprow's coefficient of contingency.

Text Books:

1. V.K.Kapoor and S.C.Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
- 2 BA/BSc I year statistics - descriptive statistics, probability distribution - Telugu Academy - Dr M.Jaganmohan Rao, Dr N.Srinivasa Rao, Dr P.Tirupathi Rao, Smt.D.Vijayalakshmi.
3. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI

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2. Goon AM, Gupta MK, Das Gupta B : Fundamentals of Statistics , Vol-I, the World Press Pvt.Ltd., Kolakota.
3. Hoel P.G: Introduction to mathematical statistics, Asia Publishinghouse.
4. M. JaganMohan Rao and Papa Rao: A Text book of Statistics Paper-I.
5. Sanjay Arora and Bansi Lal: New Mathematical Statistics: Satya Prakashan , New Delhi
6. Hogg Tanis Rao: Probability and Statistical Inference. 7th edition. Pearson.

Practicals Paper – II

1. Fitting of Binomial distribution – Direct method.
2. Fitting of binomial distribution – Recurrence relation Method.
3. Fitting of Poisson distribution – Direct method.
4. Fitting of Poisson distribution - Recurrence relation Method.
5. Fitting of Negative Binomial distribution.
6. Fitting of Geometric distribution.
7. Fitting of Normal distribution – Areas method.
8. Fitting of Normal distribution – Ordinates method.
9. Fitting of Exponential distribution.
10. Fitting of straight line, Parabola Power and exponential curve by the method of least squares
11. Computation of correlation coefficient and regression lines for ungrouped data
12. Computation of correlation coefficient, forming regression lines for grouped data
13. Computation of Pearson's, Tschprovs coefficient of contingency

Note: Training shall be on establishing formulae in Excel cells and derive the results. The excel output shall be exported to MS word for writing inference.

Dr.V.S.KRISHNA GOVT.DEGREE COLLEGE (A), VISAKHAPATNAM.

COURSE-III
CBCS/ SEMESTER SYSTEM
(w.e.f. 2020-21 Admitted Batch)
B.A./B.Sc. STATISTICS
STATISTICAL INFERENCE

Course Outcomes:

After successful completion of this course, student will be

- Learn standard sampling distributions like Chi Square, t and F and their characteristics and applications
- Know different techniques of point estimation for estimating the parameter values of population and interval estimation for population parameters.
- Get the knowledge of various topics of Inferential Statistics such as interval estimation, Testing of Hypothesis, large sample tests (Z-test), small sample tests (t-test, F-test, chi-square test) and non-parametric tests are dealt with. These techniques play an important role in many fields like pharmaceutical, agricultural, medical etc

Credits = 5 (theory 4+ practical 1)

Course Syllabus:

UNIT-I

Exact Sampling Distributions: Population, Sample, Parameter, statistic, Sampling distribution, Standard error., law of large numbers, central limit theorem (statements only). Student's t-distribution, F – Distribution, χ^2 -Distribution: Definitions, properties and their applications.

UNIT-II

Theory of Estimation: Estimation of a parameter, criteria of a good estimator – unbiasedness, consistency, efficiency, & sufficiency and. Statement of Neyman's factorization theorem. Estimation of parameters by the method of moments and maximum likelihood (M.L), properties of MLE's. Binomial, Poisson & Normal Population parameters estimate by MLE method. Confidence Intervals for mean and variance in Normal Distribution

UNIT-III

Testing of Hypothesis: Concepts of statistical hypotheses, null and alternative hypothesis, critical region, two types of errors, level of significance and power of a test. One and two tailed tests. Neyman-Pearson's lemma. Examples in case of Binomial, Poisson, Exponential and Normal distributions.

UNIT – IV

Large sample Tests: Large sample test for single mean and difference of two means, confidence intervals for mean(s). Large sample test for single proportion, difference of proportions. standard deviation(s) and correlation coefficient(s).

Small Sample tests: t-test for single mean, difference of means and paired t-test. χ^2 -test for goodness of fit and independence of attributes. F-test for equality of variances.

UNIT – V

Non-parametric tests- their advantages and disadvantages, comparison with parametric tests. Measurement scale- nominal, ordinal, interval and ratio. One sample runs test, sign test and Wilcoxon-signed rank tests (single and paired samples). Two independent sample tests: Median test, Wilcoxon –Mann-Whitney U test, Wald Wolfowitz's runs test.

TEXT BOOKS:

1. BA/BSc II year statistics - statistical methods and inference - Telugu Academy by A.Mohanrao, N.Srinivasa Rao, Dr R.Sudhakar Reddy, Dr T.C. RavichandraKumar.
2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC.PHI.

REFERENCE BOOKS:

1. Fundamentals of Mathematics statistics: VK Kapoor and SCGuptha.
2. Outlines of statistics, Vol II : Goon Guptha, M.K.Guptha, Das GupthaB.
3. Introduction to Mathematical Statistics :HoelP.G.
4. Hogg Tanis Rao: Probability and Statistical Inference. 7th edition. Pearson.

Practicals - Paper -III

1. Large sample test for single mean and difference of means.
2. Large sample test for single Proportion and difference of proportions
3. Large sample test for difference of standard deviations
4. Large sample test for correlation coefficient
5. Small sample test for single mean and difference of means.
6. Paired t-test(paired samples).
7. Small sample test for correlation coefficient
8. Small sample test for difference of variances (F-test)
9. χ^2 - test for goodness of fit and independence of attributes
10. Nonparametric tests for single sample(run test, sign test and Wilcoxon signed ranktest)
11. Nonparametric tests for related samples (sign test and Wilcoxon signed ranktest)
12. Nonparametric tests for two independent samples (Median test, Wilcoxon -Mann- Whitney - U test, Wald - Wolfowitz' s run test)

Note: Training shall be on establishing formulae in Excel cells and deriving the results. The excel output shall be exported to MS Word for writing inferences.

Dr.V.S.KRISHNA GOVT.DEGREE COLLEGE (A), VISAKHAPATNAM.

COURSE-IV

CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. STATISTICS

SAMPLING TECHNIQUES AND DESIGN OF EXPERIMENTS

Course Outcomes:

After successful completion of this course, student will be

- Introduced to various statistical sampling schemes such as simple, stratified and systematic sampling.
- an idea of conducting the sample surveys and selecting appropriate sampling techniques,
- Knowledge about comparing various sampling techniques.
- carry out one way and two way Analysis of Variance,
- understand the basic terms used in design of experiments,
- use appropriate experimental designs to analyze the experimental data

Credits = 6 (theory 4+ practical 2)

Course Syllabus:

UNIT I

Simple Random Sampling (with and without replacement): Notations and terminology, various probabilities of selection. Random numbers tables and its uses. Methods of selecting simple random sample, lottery method, method based on random numbers. Estimates of population total, mean and their variances and standard errors, determination of sample size, simple random sampling of attributes.

UNIT II

Stratified random sampling: Stratified random sampling, Advantages and Disadvantages of Stratified Random sampling, Estimation of population mean, and its variance. Stratified random sampling with proportional and optimum allocations. Comparison between proportional and optimum allocations with SRSWOR.

Systematic sampling: Systematic sampling definition when $N = nk$ and merits and demerits of systematic sampling - estimate of mean and its variance. Comparison of systematic sampling with Stratified and SRSWOR.

UNIT III

Analysis of variance: Analysis of variance (ANOVA) – Definition and assumptions. One-way with equal and unequal classification, Two-way classification.

UNIT IV

Design of Experiments: Definition, Principles of design of experiments, CRD: Layout, advantages and disadvantage and Statistical analysis of Completely Randomized Design (C.R.D). Randomized Block Design

(R.B.D) and Latin Square Design (L.S.D) with their layouts and Analysis, Missing plot technique in RBD and L.S.D, Efficiency of RBD over CRD, Efficiency of L.S.D over RBD and CRD.

UNIT V

Factorial experiments – Main effects and interaction effects of 2^2 and 2^3 factorial experiments and their Statistical analysis. Yates procedure to find factorial effect totals.

Text Books:

1. Telugu Academy BA/BSc III year paper - III Statistics - applied statistics - Telugu academy by Prof.K.Srinivasa Rao, Dr D.Giri. Dr A.Anand, Dr V.Papaiah Sastry.
2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC.PHI.

Reference Books:

1. Fundamentals of applied statistics: VK Kapoor and SC Gupta.
2. Indian Official statistics - MR Saluja.
3. Anuvarthita Sankyaka Sastram – Telugu Academy.

Practicals - Paper -IV

Sampling Techniques:

Estimation of population mean and its variance by

1. Simple random sampling with and without replacement. Comparison between SRSWR and SRSWOR.
2. Stratified random sampling with proportional and optimum allocations. Comparison between proportional and optimum allocations with SRSWOR.
3. Systematic sampling with $N-nk$. Comparison of systematic sampling with Stratified and SRSWOR.

Design of Experiments:

4. ANOVA - one - way classification with equal and unequal number of observations
5. ANOVA Two-way classification with equal number of observations.
6. Analysis of CRD.
7. Analysis of RBD Comparison of relative efficiency of CRD with RBD
8. Estimation of single missing observation in RBD and its analysis
9. Analysis of LSD and efficiency of LSD over CRD and RBD
10. Estimation of single missing observation in LSD and its analysis
11. Analysis of 2^2 with RBD layout
12. Analysis of 2^3 with RBD layout

Note: Training shall be on establishing formulae in Excel cells and deriving the results. The excel output shall be exported to MS Word for writing inferences.

Dr.V.S.KRISHNA GOVT.DEGREE COLLEGE (A), VISAKHAPATNAM.

COURSE-V
CBCS/ SEMESTER SYSTEM
(w.e.f. 2020-21 Admitted Batch)
B.A./B.Sc. STATISTICS
APPLIED STATISTICS

Course Outcomes:

After successful completion of this course, student will be

- Get the knowledge of time series.
- Basic idea of seasonal component, growth curves.
- Get the knowledge of Index Numbers.
- Understand the vital statistics.

Credits = 5 (theory 4+ practical 1)

Course Syllabus

UNIT I

Time Series: Time Series and its components with illustrations, additive, multiplicative models. Trend: Estimation of trend by free hand curve method, method of semi averages. Determination of trend by least squares (Linear trend, parabolic trend only), moving averages method.

UNIT II

Seasonal Component: Determination of seasonal indices by simple averages method, ratio to moving average, Ratio to trend and Link relative methods, De-personalization.

UNIT III

Growth curves: Modified exponential curve, Logistic curve and Gompertz curve, fitting of growth curves by the method of three selected points and partial sums. Detrending. Effect of elimination of trend on other components of the time series

UNIT IV

Index numbers: Concept, construction, problems involved in the construction of index numbers, uses and limitations. Simple and weighted index numbers. Laspeyres's, Paasche's and Fisher's index numbers, Criterion of a good index number, Fisher's ideal index numbers. Cost of living index number and wholesale price index number.

UNIT V

Vital Statistics: Introduction, definition and uses of vital statistics, sources of vital statistics. Measures of different Mortality and Fertility rates, Measurement of population growth. Life tables: construction and uses of life tables.

TEXT BOOKS:

1. Fundamentals of applied statistics: VK Kapoor and SC Gupta.
2. BA/BSc III year paper - III Statistics - applied statistics - Telugu academy by prof.K.Srinivasa Rao, Dr D.Giri, Dr A.Anand, Dr V.Papaiah Sastry

REFERENCE BOOKS:

3. Anuvarthita Sankhyaka Sastram - Telugu Academy.
4. Mukopadhyay, P (2011). Applied Statistics, 2nd ed. Revised reprint, Books and Allied Pvt. Ltd.
5. Brockwell, P.J. and Devis, R.A. (2003). Introduction to Time Series Analysis. Springer.
6. Chatfield, C. (2001). Time Series Forecasting., Chapman & Hall.
7. Srinivasan, K. (1998). Demographic Techniques and Applications. Sage Publications
8. Srivastava O.S. (1983). A Text Book of Demography. Vikas Publishing House

Practical Paper –V

Time Series:

1. Measurement of trend by method of moving averages(odd and even period)
2. Measurement of trend by method of Least squares (linear and parabola)
3. Determination of seasonal indices by method simple averages
4. Determination of seasonal indices by method of Ratio to moving averages
5. Determination of seasonal indices by method of Ratio to trend
6. Determination of seasonal indices by method of Link relatives

Index Numbers:

7. Computation of simple index numbers.
8. Computation of all weighted index numbers.
9. Computation of reversal tests.

Vital Statistics:

10. Computation of various Mortality rates
11. Computation of various Fertility rates
12. Computation of various Reproduction rates.
13. Construction of Life Tables

Note: Training shall be on establishing formulae in Excel cells and deriving the results. The excel output shall be exported to MS Word for writing inferences.

Recommended Question Paper Patterns and Models
BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-I DESCRIPTIVE STATISTICS

Unit	TOPIC	S.A.Q(including choice)	E.Q(including choice)	Total Marks
I	Introduction to statistics	2	2	30
II	Measures of dispersion	2	2	30
III	Introduction to probability	1	2	25
IV	Random variable	2	2	30
V	Mathematical expectation	1	2	25
TOTAL		8	10	140

S. A. Q = Short answer questions (5 marks)
E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M
 Essay questions : 5 X 10 M = 50 M

Total Marks = 75 M

Dr. V. S. KRISHNA GOVT.DEGREE COLLEGE (A), VISAKHAPATNAM.

CBCS/ SEMESTER SYSTEM
(W.e.f 2020-21 Admitted Batch)
B.A./B.Sc. STATISTICS
COURSE-I DESCRIPTIVE STATISTICS
MODEL QUESTION PAPER

Time: 3Hrs

Max.Marks:75M

I. Answer any FIVE of the following:

5x5=25

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

II. Answer any FIVE of the following:

5x10=50

(one question from each unit)

9.(a)

OR

(b)

10.(a)

OR

(b)

11.(a)

OR

(b)

12.(a)

OR

(b)

13.(a)

OR

(b)

Recommended Question Paper Patterns and Models
BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-II PROBABILITY THEORY AND DISTRIBUTIONS

Unit	TOPIC	S.A.Q(including choice)	E.Q(including choice)	Total Marks
I	Discrete distribution	2	2	30
II	Continuous distribution	2	2	30
III	Correlation	1	2	25
IV	Regression	2	2	30
V	Curve fitting	1	2	25
TOTAL		8	10	140

S. A. Q = Short answer questions (5 marks)

E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M

Essay questions : 5 X 10 M = 50 M

Total Marks = 75 M

Dr. V. S. KRISHNA GOVT.DEGREE COLLEGE (A), VISAKHAPATNAM.

CBCS/ SEMESTER SYSTEM

(W.e.f 2020-21 Admitted Batch)

B.A./B.Sc. STATISTICS

COURSE-II PROBABILITY THEORY AND DISTRIBUTIONS

MODEL QUESTION PAPER

Time: 3Hrs

Max.Marks:75M

I. Answer any FIVE of the following:

5x5=25

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

II. Answer any FIVE of the following:

5x10=50

(one question from each unit)

9.(a)

OR

(b)

10.(a)

OR

(b)

11.(a)

OR

(b)

12.(a)

OR

(b)

13.(a)

OR

(b)

Recommended Question Paper Patterns and Models

BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-III STATISTICAL INFERENCE

Unit	TOPIC	S.A.Q(including choice)	E.Q(including choice)	Total Marks
I	Distributions	2	2	30
II	Theory of estimation	2	2	30
III	Testing of hypothesis	1	2	25
IV	Large and small sample tests	2	2	30
V	Non parametric tests	1	2	25
TOTAL		8	10	140

S. A. Q = Short answer questions (5 marks)

E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M

Essay questions : 5 X 10 M = 50 M

Total Marks = 75 M

Dr. V. S. KRISHNA GOVT.DEGREE COLLEGE (A), VISAKHAPATNAM,

CBCS/ SEMESTER SYSTEM
(W.e.f 2020-21 Admitted Batch)
B.A./B.Sc. STATISTICS
COURSE-III STATISTICAL INFERENCE
MODEL QUESTION PAPER

Time: 3Hrs

Max.Marks:75M

I. Answer any FIVE of the following:

5x5=25

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

II. Answer any FIVE of the following:

5x10=50

(one question from each unit)

9.(a)

OR

(b)

10.(a)

OR

(b)

11.(a)

OR

(b)

12.(a)

OR

(b)

13.(a)

OR

(b)

Recommended Question Paper Patterns and Models
BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-IV SAMPLING TECHNIQUES AND DESIGN OF EXPERIMENTS

Unit	TOPIC	S.A.Q(including choice)	E.Q(including choice)	Total Marks
I	Simple random sampling	2	2	30
II	Stratified random and systematic sampling	2	2	30
III	Analysis of variance	1	2	25
IV	RBD,LSD & CRD	2	2	30
V	Factorial experiments	1	2	25
TOTAL		8	10	140

S. A. Q = Short answer questions (5 marks)

E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M

Essay questions : 5 X 10 M = 50 M

Total Marks = 75 M

Dr. V. S. KRISHNA GOVT. DEGREE COLLEGE (A), VISAKHAPATNAM.

CBCS/ SEMESTER SYSTEM
(W.e.f 2020-21 Admitted Batch)

B.A./B.Sc. STATISTICS

COURSE-IV SAMPLING TECHNIQUES AND DESIGN OF EXPERIMENTS

MODEL QUESTION PAPER

Time: 3Hrs

Max.Marks:75M

I. Answer any FIVE of the following:

5x5=25

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

II. Answer any FIVE of the following:

5x10=50

(one question from each unit)

9.(a)

OR

(b)

10.(a)

OR

(b)

11.(a)

OR

(b)

12.(a)

OR

(b)

13.(a)

OR

(b)

Recommended Question Paper Patterns and Models
BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-V: APPLIED STATISTICS				
Unit	TOPIC	S.A.Q(including choice)	E.Q(including choice)	Total Marks
I	Time series	2	2	30
II	Seasonal components	2	2	30
III	Growth curves	1	2	25
IV	Index numbers	2	2	30
V	Vital statistics	1	2	25
TOTAL		8	10	140

S. A. Q = Short answer questions (5 marks)
 E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M
 Essay questions : 5 X 10 M = 50 M

Total Marks = 75 M

Dr. V. S. KRISHNA GOVT.DEGREE COLLEGE (A), VISAKHAPATNAM.

CBCS/ SEMESTER SYSTEM
(W.e.f 2020-21 Admitted Batch)
B.A./B.Sc. STATISTICS
COURSE-V APPLIED STATISTICS
MODEL QUESTION PAPER

Max.Marks:75M

Time: 3Hrs

5x5=25

I. Answer any FIVE of the following:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

5x10=50

II. Answer any FIVE of the following:

(one question from each unit)

9.(a)

OR

(b)

10.(a)

OR

(b)

11.(a)

OR

(b)

12.(a)

OR

(b)

13.(a)

OR

(b)



J. Sreeivasa Rao.