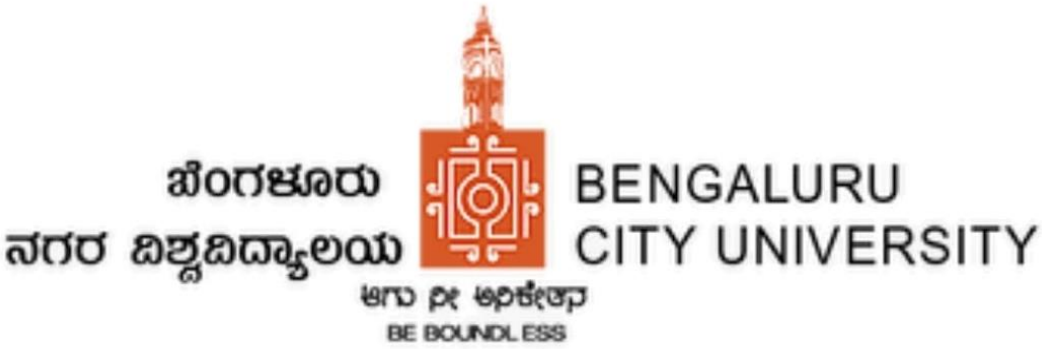

BENGALURU CITY UNIVERSITY
Department of Statistics
Central College Campus Bengaluru – 560 001

Approved Syllabus for
III & IV Semester Statistics Under-Graduate (UG) Program

Framed according to the State Education Policy -SEP 2024

BENGALURU CITY UNIVERSITY
BOARD OF STUDIES INSTATISTICS

Proceedings of the meeting of Board of studies in Statistics held at 11.00 am on 18--07-2025 in the Department of FAD, Jnanajyothi Central Campus. Bengaluru City University, Bengaluru-560001

The following decisions were taken.

1.The members discussed and approved the syllabus for III and IV semesters of UG major Statistics as per SEP 2024 guidelines

2. The panel of examiners for BSc examinations for the year 2025-26 is approved

Members Present:

1	Dr.Deepu Yogesh Kamath Associate Professor of Statistics Nrupathunga University ,Bangalore 560 001.	18/7/25
2	Sarvesh Gopinathan Assistant Professor MES College of Arts, Commerce & Science, Malleshwaram, Bangalore 560 003.	18/7/25
3	Smt Ambika.C Assistant Professor of Statistics Mount Carmel College ,Autonamous No.58,Palace Road, Bangalore 560 052	18.07.2025
4	Sri Narayana Gowda.N Assistant Professor of Statistics Reva University , Yelahanka,Bangalore 560 064.	18/7/2025
5	Dr. Mohankumari, C. Assistant Professor of Statistics Mount Carmel College ,Autonomous No.58,Palace Road, Bangalore 560 052	18/7/2025
6	Sri R.Prakash. Head and Associate Professor of Statistics Vijaya College, R.V.Road, Basavanagudi, Bangalore 560 004.	R.Prakash 18/7/2025 Head of the Department of Statistics Vijaya College Bangalore-560 004.

Regulations and Syllabus
for
STATISTICS
in
Three Year BSc Course (SEP 2024)

Eligibility

1. Only those candidates who have passed Pre-University course or an equivalent course with Mathematics/Business Mathematics/Basic Mathematics/Applied Mathematics as one of the optional subjects are eligible to take Statistics as one of the optional subjects in BSc course.
2. Any student taking Statistics as one of the optional subjects in the BSc course shall take Mathematics as another optional subject.

Scheme of Instruction

1. The subject of Statistics in this course has to be taught by MSc/MA degree holders in Statistics / Applied Statistics.
2. The theory question paper for each paper shall cover all the topics in the pertaining syllabus with proportional weightage to the number of hours of instructions prescribed.
3. The practicals are to be conducted in batches as per the University norms for the faculty of science (10 students per batch per teacher).
4. It is expected that each student collects and uses real life data for practical classes.
5. Maximum marks for each record in the examination is 5.
6. Study tour for the students is strongly recommended to gain knowledge of applications of Statistics in industries/Agriculture/Medical fields.

Program Outcomes

By the end of the program the students will be able to:

1. Acquire fundamental / systematic or coherent understanding of the academic field of Statistics and its different learning areas and applications.
2. Develop and demonstrate an ability to understand major concepts in various disciplines of Statistics.
3. 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.
4. 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.
5. 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.
6. Have a knowledge regarding use of data analytic stools like Excel and R-programming.
7. Developed ability to critically assess a standard report having graphics, probability statements.
8. Analyze, interpret the data and hence help policy makers to take a proper decision.
9. Recognize the importance of statistical modeling and computing, and the role of approximation and mathematical approaches to analyse the real problems using various statistical tools.
10. 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;
    (v) Personal skills such as the ability to work both independently and in a group.
11. Undertake research projects by using research skills –preparation of questionnaire, conducting national sample survey, research projects using sample survey, sampling techniques.

12. 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.

Pedagogy

1. The course is taught using traditional chalk and talk method using problem solving through examples and exercises.
2. Students are encouraged to use resources available on open sources.

COURSE MODEL:

SEM	COURSE TITLE	THEORY/ PRACTICAL HOURS PER WEEK	DURATION OF EXAM	CIA MARKS	ESE MARKS	TOTAL	CREDITS
I	BASIC STATISTICS-I	04	03	20	80	100	3
	PRACTICAL-I	03	03	10	40	50	2
II	BASIC STATISTICS-II	04	03	20	80	100	3
	PRACTICAL -II	03	03	10	40	50	2
III	STATISTICAL INFERENCE-I	04	03	20	80	100	3
	PRACTICAL-III	03	03	10	40	50	2
	ELECTIVE: I POPULATION STUDIES	02	1 ½	10	40	50	2
IV	STATISTICAL INFERENCE-II	04	03	20	80	100	3
	PRACTICAL-IV	03	03	10	40	50	2
	ELECTIVE: II INDUSTRIAL STATISTICS	02	1 ½	10	40	50	2
	SEC-I Data Analysis using R (PRACTICAL)	03	03	10	40	50	02

STATISTICS-III

THIRD SEMESTER

4 hours lecture + 3 hours practical per week
(Theory: 3 credits + Practical: 2 credits)

Course Objectives:

1. To acquire the knowledge of constructing sampling distribution and derive the different sampling distributions and their properties
2. To Estimate the parameters using different criteria like unbiased estimator, consistent estimator, sufficient estimator and efficient estimators.
3. To Understand different method of estimators through Cramer Rao Inequality, minimum variance unbiased and minimum variance bound estimator.
4. To estimate the parameters using maximum likelihood and moment estimators
5. To estimate the parameters using confidence intervals .

Title: STATISTICAL INFERECE-I

(60 hours: 4 credits)

UNIT 1: SAMPLING DISTRIBUTIONS **15 hours**

Definitions of random sample, parameter and statistic, sampling distribution of sample mean, standard error of sample mean, sampling distribution of sample variance, standard error of sample variance.

Chi square distribution- mean, variance, moments, MGF, mode, additive property. Student's and Fisher's t-distribution- mean, variance.

Snedecor's F-distribution: mean, variance and mode. Distribution of 1/F.

UNIT 2: ESTIMATION-I **15 hours**

Concepts of estimator and estimate. Criteria for estimators: Unbiasedness: for discrete and continuous distributions Consistency. Invariance property of consistent estimators.
Sufficient statistics. Statement of Neyman-Factorization theorem.
Efficiency and relative efficiency. Mean square error as a criterion for comparing estimators

UNIT 3: ESTIMATION-II **15 hours**

Likelihood function ,Fisher information function. Statement of Cramer–Rao inequality and its applications.

Minimum Variance Bound Estimator and Minimum Variance Unbiased Estimator. Examples on standard distributions., Maximum likelihood estimation, Properties of MLE and examples.

UNIT 4: ESTIMATION-III **15 hours**

Method of moment estimation and properties of moment estimators.

Interval Estimation: Confidence interval, confidence coefficient, shortest confidence interval. Method of constructing confidence intervals using pivotal quantity.

Construction of confidence intervals for mean, difference of two means, variance and ratio of variances, proportions, difference of two proportions and correlation coefficient.

PRACTICALS : STATISTICAL INFERENCE-I

List of Assignments **(30 hours : 2 credits)**

(DEMONSTRATION OF PRACTICALS USING MS-EXCEL and R)

1. Drawing random sample under SRSWR from a given population and estimation of the population mean and the standard error of sample mean.
2. Drawing random sample under SRSWR from a given population and estimation of the population variance and the standard error of sample variance.
3. Point estimation of parameters- (Unbiasedness and Efficient estimator)
4. Comparison of estimators by plotting mean square error.
5. Estimation of parameters by Maximum Likelihood method – Discrete distributions
6. Estimation of parameters by Maximum Likelihood method – Continuous distributions.
7. Estimation of parameters by method of moments.
8. Interval Estimation-I Construction of confidence intervals population mean/s & variances (large sample cases)
9. Interval Estimation-II Construction of confidence intervals for population proportions and correlation co-efficient (large sample cases)
10. Interval Estimation-III Construction of confidence intervals for population mean/s and variance/s (small sample cases)

REFERENCES:

1. Freund J.E. (2001): Mathematical Statistics, Prentice Hall of India.
2. Goon A.M., Gupta M.K., Das Gupta B. (2013): Fundamentals of Statistics, Vol.I, World Press, Calcutta.
3. Hogg R.V. and Tannis E.A. (1988): Probability and Statistical Inference, Collier MacMillan.
4. Gupta, S.C. (2018), Fundamental of Statistics, Himalaya PublishingHouse,7th Edition.
5. Hogg, R.V. McKean J.W. and Craig, A. T. (2021), Introduction to Mathematical Statistics, Pearson 10th Edition.
6. Mood A.M, Graybill F.A and Boes D.C. (1974): Introduction to the Theory of Statistics, McGraw Hill.
7. Gupta S.C. and V.K. Kapoor (2020), Fundamental of Mathematical Statistics, Sultan Chand and Co. 12th Edition.
8. Rohatgi. V.K. and A.K. Md. Ehsanes Saleh (2002). An Introduction to Probability theory and Mathematical Statistics. John Wiley (WSE).

Course Outcomes

After completion of this course the students will be able to

1. Construct sampling distribution .
2. Estimate the parameters using different criteria like unbiased estimator, consistent estimator, sufficient estimator and efficient estimators.
3. Understand different method of estimators through Cramer Rao Inequality, minimum variance unbiased and minimum variance bound estimator.
4. estimate the parameters using maximum likelihood and moment estimators
5. To estimate the parameters using confidence intervals .
6. Judge the Point and interval estimation for estimating the parameters.

III Semester B.Sc.
STATISTICS -ELECTIVE-I
Title: Population Studies
(Theory: 2 hours lecture per week: 2 credits)

Course Objectives:

1. To enable the students to identify appropriate sources of data, perform basic demographic analysis using various techniques and ensure their comparability across populations.

2. To acquire knowledge about the construction of life table and its applications in demographic analysis.

Title: POPULATION STUDIES

(30 hours: 2 credits)

UNIT 1: DEMOGRAPHIC DATA, FERTILITY AND GROWTH RATES 15 hours

Definition, nature and scope of population Studies. Sources of population data – salient features of Census, Civil Registration System, National Sample Surveys, Demographic Surveys, relative merits and demerits of these sources.

Basic concepts and terms used in the study of fertility. Measures of fertility- Crude Birth Rate (CBR), General Fertility Rate (GFR), Age Specific Fertility Rate (ASFR), Total Fertility Rate (TFR), Birth order statistics, Child Women ratio.

Measures of reproduction- Gross reproduction Rate (GRR)and Net Reproduction rate (NRR). Measurement of population growth rate- simple growth rate and compound growth rate.

UNIT-2 MORTALITY AND LIFE TABLE 15 hours

Basic concepts and terms used in the study of mortality. Measures of mortality- Crude Death Rate (CDR), Age Specific Death Rate (ASDR), Direct and Indirect Standardized Death rates, Infant Mortality Rate (IMR), Under-five mortality Rate, Neo-natal mortality rate, Post-natal mortality rate; Maternal Mortality Rate (MMR).

Life table: Components of a life table, force of mortality and expectation of life table, types of life tables.

References

1. Barclay, G, W(1968). Techniques of Population Analysis, John Wiley and Sons, Incs. New York/London.
2. Keyfitz, H (1968). Introduction to the Mathematics of Population. Addison-Wesley Publishing Co.
3. Pathak,K.B and Ram,F (1991).Techniques of Demographic Analysis, Himalaya Publishing House.
4. Ramakumar.R (1986). Technical Demography, Wiley Eastern Ltd.
5. Srinivasan.K (1998). Basic Demographic Techniques and Applications, Sage Publication, New Delhi.
6. Wunsch G.J. & M.G. Tarmota(1978). Introduction to Demographic Analysis, Plenum Press, N.Y.
7. Gupta,S.C and V.K. Kapoor (2001): Fundamentals of Applied Statistics. (Sultan Chand and Co.)
8. Mukhopadhyay. P (2015). Applied Statistics. Calcutta Publishing House.

Course Outcomes (CO)

Upon successful completion of this course the student will be able to

1. Study the concepts of Vital Statistics, sources of data, different measures of Fertility, Mortality and migration.
2. Understand the Growth rates- GRR and NRR and their interpretations.

STATISTICS -IV
FOURTH SEMESTER

4 hours lecture + 3 hours practical per week
(Theory: 3 credits + Practical: 2 credits)

Course Objectives:

To enable the students to learn

1. The application of testing of hypotheses, solve the probability of type-I and type-II error, power of the test
2. Learn to verify the PMF/PDF whether it is monotone likelihood ratio function.
3. To solve the problem on MP, UMP test
4. Understand the concept of test statistic and test procedure for testing population mean, variance, proportions for large sample size and test procedure for testing population mean, variance, correlation and regression coefficient in case of small sample size.
5. Understand the difference between parametric and non-parametric test.

Title: STATISTICAL INFERENCE-II

(60 hours: 3 credits)

UNIT 1: TESTING OF HYPOTHESIS-I **15 hours**

Statistical hypotheses- Null and alternative, Simple and Composite hypotheses. Type-I and Type-II Errors.

Test function. Randomized and non-randomized tests. Power function, size, power of the test and level of significance. critical region. P-value and its interpretation.

Most Powerful (MP) test. Statement of Neyman – Pearson Lemma and its applications. Monotone likelihood ratio (MLR) property. Uniformly most powerful (UMP) test. Statement of the theorem on UMP tests for testing one sided hypotheses for distributions with MLR property. (Bernoulli, Binomial, Poisson, Normal, Exponential)

UNIT 2: TESTING OF HYPOTHESIS-II **15 hours**

Large sample tests of significance. Tests for single mean, equality of two means, Tests for proportions.

Small sample tests of significance. Tests for single mean, equality of two means, paired t-test

UNIT 3: TESTING OF HYPOTHESIS-III **15 hours**

Test for single variance and equality of two variances. Test for correlation coefficient, Test for regression coefficients of simple regression model, Fisher's Z-transformation and its applications.

Chi-square tests for independence of attributes and goodness of fit.

Sequential Probability Ratio Test (SPRT): Need for sequential tests, Wald's SPRT for binomial proportion and Normal population mean when population variance is known.

UNIT 4: NONPARAMETRIC TESTS **15 hours**

Introduction to nonparametric tests. Kolmogorov-Smirnov one sample test, Run, test for randomness based on runs, sign test and Wilcoxon signed rank test for one and paired sample,

Kolmogorov-Smirnov two sample test, Wald-Wolfawitz run test, median test and Mann-Whitney- Wilcoxon test for two sample problems. Test for independence based on Spearman's rank correlation coefficient.

Kruskal-Wallis and Friedman test.

LAB: STATISTICAL INFERENCE-II

List of Assignments **(30 hours : 2 credits)**

(DEMONSTRATION OF PRACTICALS USING MS-EXCEL and R)

1. Evaluation of probabilities of Type-I and Type-II errors and power of tests.
2. MP test for parameters of Binomial, Poisson.
3. MP test for parameters of Normal distribution.
4. Tests for single population mean, equality of two population means when variance is known.
5. Tests for single Population proportion and equality of two Population proportions
6. Tests for single population mean, equality of two population means when variance is unknown and paired t-test.
7. Tests for goodness of fit (Uniform, Binomial and Poisson) and Tests for independence of attributes.
8. Tests for single population variance and equality of two variances under normality.
9. Construction of SPRT for Bernoulli and normal distributions when known variance.
10. Non-parametric tests

References:

1. Goon A.M., Gupta M.K., Das Gupta .B. (2013): Fundamental of Statistics, Vol.I, World Press, Calcutta.
2. Gupta. S.C and V.K.Kapoor (2020): Fundamental of Mathematical Statistics, Sultan Chand and Co.,12th edition.
3. Hogg. R.V. , Mckean, J.W. and Craig. A.T. (2021): Introduction to Mathematical Statistics – Pearson, USA. 8th edition.
4. Medhi J. (2006): Statistical Methods: An Introductory Text, New Age.
5. Mukhopadhyay. P. (1996): Mathematical Statistics, Calcutta Publishing House.
6. Dudewicz. E.J. and Mishra. S.N. (1998): Modern Mathematical Statistics. John Wiley.
7. Kale B.K (2005) A First Course on Parametric Inference, Narosa 2nd Edition.
8. Kale B.K and Muralidharan (2015), Parametric Inference -an introduction, Alpha science publishers.
9. Rohatgi. V.K. and A.K. Md. Ehsanes Saleh (2002). An Introduction to Probability theory and Mathematical Statistics. John Wiley. (WSE).
10. Casella, G. and Berger, R.L. (2007). Statistical Inference, Duxbury Press, Belmont, California, USA. (2nd Edition).

Course Outcomes

After completion of this course the students will be able to

1. Understand the application of testing of hypotheses, solve the probability of type-I and type-II error, power of the test
2. Learn to verify the PMF/PDF whether it is monotone likelihood ratio function.
3. Able to solve the problem on MP, UMP test
4. Based on the size of the sample and status of the population variance the test statistic is applied to test the test of significance.
5. Understand the concept of test statistic and test procedure for testing population mean, variance, proportions for large sample size and test procedure for testing population mean, variance, correlation and regression coefficient in case of small sample size.
6. Understand the difference between parametric and non-parametric test, various non-parametric tests

IV Semester B.Sc.
STATISTICS -ELECTIVE-II
2 hours lecture per week
(Theory: 2 credits)

Course Objectives:

To enable the students to learn

1. About the quality, quality control, Probability and k sigma limits, action and warning limits. Various tools of SQC.
2. The construction and interpretation of mean, range and standard deviation charts.
3. Process control and product control, different limits and causes of variation.
4. The construction of control chart for variables and process capability.
5. The lot acceptance sampling- single sampling plan

Title: INDUSTRIAL STATISTICS

(30 hours: 2 credits)

UNIT 1: PROCESS CONTROL 15 hours

Quality, quality control,. Chance and assignable causes of variation. Statistical quality control (SQC)- Aims and objectives. Process control and product control.

Control charts and basis for its construction, Probability and k sigma limits, action and warning limits. Control limits, basis, construction and interpretation of mean, range and standard deviation charts. Criteria for detecting lack of control. Control limits, basis, construction and interpretation of np-chart, p-chart, stabilized p-chart, c-chart and u-chart.

UNIT 2: PROCESS CAPABILITY AND PRODUCT CONTROL 15 hours

Natural tolerance limits and specification limits. Process capability study :process capability and PCR.

Product control/Acceptance sampling-Introduction. Sampling inspection, 100 percent inspection and Rectifying inspection. Producer's risk and consumer's risk.

Acceptance Sampling plans – single and double sampling plans by attributes (only concept).

References:

1. Grant, E.L and Leavenworth, R.S (1988): Statistical Quality control. 6th edition, Mc Graw Hill.
2. Gupta, R.C: (2001): Statistical Quality control. (Khanna Pub. Co.)
3. Montgomery, D.C (2016): Introduction to Statistical Quality control. (Wiley Int. Edn.)
4. Goon, A.M et.al.(2013): Fundamentals of Statistics Vol II (World Press, Calcutta
5. Gupta, S.C and V.K. Kapur(2018): Fundamentals of Applied Statistics. (Sultan Chand and Co.)
6. John, S. Oakland and Followell, R.F (1990): Statistical Process Control. (East West Press, India)
7. Wetherill, G.B and D. W. Bfown: Statistical Process Control theory and practice. (Chapman and Hall)
8. Mahajan, M (2001): Statistical Quality Control. Dhanpat Rai & Co. (P) Ltd.
9. Donne, C.S. (1997): Quality. Prentice Hall.

Course outcomes

After completion of this course the students will be able to

1. Understand about the quality, quality control, Probability and k sigma limits, action and warning limits. Various tools of SQC.
2. Construction and interpretation of mean, range and standard deviation charts.
3. To Judge the Criteria for detecting lack of control.
4. Know About process control and product control, different limits and causes of variation.
5. Construction of control chart for variables and process capability.
6. The lot acceptance sampling- single sampling plan and the application and computation of Producer's risk and consumer's risk for different sampling plans.

Syllabus for B.Sc. SEC-I (Skill Enhancement Course)

Course Title: Statistical Data Analysis Using R Software	
Total Contact Hours: 30	Course Credits:02
Formative Assessment Marks: 10	Duration of ESA/Exam: 2 hours
Model Syllabus Authors: State level SEP-model curriculum setting committee members-Statistics	Summative Assessment Marks: 40 + 10 =50

Content of Practical SEC Paper-I	**30 Hrs**
UNIT 1: Introduction to R and its objective:	**10 Hrs**
Computer software and utility, statistical software. R-software- Essentials, advantages, expressions, and objects. Discuss the R statistical programming language. Download and install Base R, R Studio, and R Tools. Navigate the R workspace. Discuss the use of operators and functions in R. Discuss what R packages are and what they are used for. Download and set up a general package for use in the workspace. Find help with issues in the use of R. commands, variables, data types, numbers, math, string, Booleans, operators, functions.	
UNIT 2: Data structure in R and data Entry, Importing data in to R	**10 Hrs**
Vectors, lists, matrix, array, data frame, factors, the focus shifts towards the techniques of entering and importing data into R, a fundamental skill in data analysis using this powerful language, Data entry, reading from a text file, the data editor, interfacing to other programmes, Descriptive statistics.	
UNIT 3: Elements of Graphing in R and Basic datasets Analysis in R	**10 Hrs**
Cleaning datasets, performing basic statistical analysis, and creating graphs for visual data representation, basic methods of statistical analysis, covering descriptive statistics, frequency tables, and cross-referencing tables. Graphics (plot, line, scatter plot, pie chart, bars)-summary statistics, graphical display of distributions. Simple correlation and regression. Generation of random numbers from discrete and continuous distributions, random variables and explore their applications.	

Course Outcomes

1. Learn R basics and syntax
2. Work with R variables and data types
3. Use operators and control structures (if, while, for)
4. Create and use functions in R
5. Work with data structures (vectors, lists, matrices, arrays)
6. Create data frames and use factors
7. Make plots and visualize data (line, scatter, pie, bar)
8. Perform basic statistics (mean, median, mode)
9. Analyze data sets using R

Text Books

1. Peter Dalgaard: Introductory statistics for R, Springer.
2. Venables W.N. , Smith D.M. and the R-development core team, An Introduction to R
3. R for data science, Hadley Wickham 2016
4. The artt of Programmining : A tour for statistical saftware design , Norman Matloff 2011'
5. A Course in Statistics With R, by Prabhanjan Narayanachar Tattar,

   Suresh Ramaiah, B.G. Manjunath, First published:21 March 2016.
6. Sudha G.Purohit, Sharad D. Gore, Shailaja R Deshmukh,(2009), Statistics Using R, Narosa Publishing House.

Scheme for Theory and Practicals

(Effective from 2024-2025) Scheme SEP

COURSE MODEL

Distribution of Internal Marks for Internal Assessment (Theory)

Internal assessment for 20 marks comprises of performance in the tests, assignment and seminar

Sl.No.	Head	Marks
1	Two internal tests for 5 marks each	10
2	Assignment	05
3	Seminar	05
Total		20

Distribution of Internal Marks for Internal Assessment (Practical)

Internal assessment for 10 marks comprises of performance in the tests, submission of practical record and attendance.

Sl.No.	Head	Marks
1	One mock test	05
2	Internal viva	05
Total		10

Scheme for Theory Examination: 80 Marks
B.Sc. Degree Examination, 2024
Scheme SEP
Subject: STATISTICS

Time: 3 hours **Max. Marks -80**

SECTION - A

I Answer any TEN of the following questions **(10 x 3 = 30)**

(Answer any 10 out of 12 questions)

Number of question 12, from 1 to 12

SECTION - B

II Answer any FIVE of the following questions **(5x 10 = 50)**

(Answer any 5 out of 8 questions)

Number of question 5, from 13 to 20

Scheme for Theory Examination: 80 Marks

Unit	Section A 3 Marks	Section B 10 Marks	Total Marks
Unit - I	3	2	29
Unit - II	3	2	29
Unit - III	3	2	29
Unit - IV	3	2	29
Total	**10x3=30 marks (Answer any 10 out of 12 questions)**	**5x10=50 marks (Answer any 5 out of 8 questions)**	**116**

Scheme for Practical Examination:

Sl.No.	Practical	Marks
1	Answer any FIVE out of EIGHT questions.(07 marks each) (5 x 7)	35
2	Practical record	5
3	Continuous Internal Assessment (CIA)	10
	Total	50
Sl.No.	Practical	Marks