Statistics

Table-8: B.Sc., SEMESTER – II

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation course - 3* Environmental Sci	50	0	50	2	2
4	*Foundation course – 4A* ICT – 1 (Information & Communication Technol)	50	0	50	2	2
5	DSC* 1 B (Group Sub- 1)	100	25	75	4	3
6	DSC 1 B Lab Practical	50	0	50	2	2
7	DSC 2 B (Group Sub- 2)	100	25	75	4	3
8	DSC 2 B Lab Practical	50	0	50	2	2
9	DSC 3 B (Group Sub- 3)	100	25	75	4	3
10	DSC 3 B Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

B.Sc. Table-9: B.Sc., SEMESTER – III

SEMESTER – III

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation Course - 5* Entrepreneurship	50	0	50	2	2
4	*Foundation course -2B* Communication & Soft Skills -2	50	0	50	2	2
5	DSC 1 C (Group Sub- 1)	100	25	75	4	3
6	DSC 1 C Practical	50	0	50	2	2
7	DSC 2 C (Group Sub- 2)	100	25	75	4	3
8	DSC 2 C Practical	50	0	50	2	2
9	DSC 3 C (Group Sub- 3)	100	25	75	4	3
10	DSC 3 C Practical	50	0	50	2	2
	Total	750	-	-	30	25

Table-10: B.Sc., SEMESTER – IV

SEMESTER – IV

Sno	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours**	Credits

1	*Foundation Course – 2C** Communication & Soft Skills -3	50	0	50	2	2
2	*Foundation Course – 6** Analytical Skills	50	0	50	2	2
3	*Foundation Course - 7* ** CE (Citizenship Education)	50	0	50	2	2
4	*Foundation course – 4B* ICT – 2 (Information & Communication Technol)	50	0	50	2	2
5	DSC 1 D (Group Sub- 1)	100	25	75	4	3
6	DSC 1 D Lab Practical	50	0	50	2	2
7	DSC 2 D (Group Sub- 2)	100	25	75	4	3
8	DSC 2 D Lab Practical	50	0	50	2	2
9	DSC 3 D (Group Sub- 3)	100	25	75	4	3
10	DSC 3 D Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

*To be taught by English Teachers (and partly by Maths/Stat Teachers)
** To be taught by Telugu Teachers

Statistics (with Maths Combination)

Year	Semester	Title	Internal Marks	External Examination
I	I	Paper - I Descriptive Statistics and Probability	25	75
	II	Paper II - Mathematical Expectation and Probability Distributions	25	75
II	III	Paper - III Statistical Methods	25	75
	IV	Paper IV Statistical Inference	25	75

Statistics (with Non - Maths Combination)

Year	Semester	Title	Internal Marks	External Examination
I	I	Paper - I Elementary Mathematics	25	75
	II	Paper II - Descriptive Statistics	25	75
II	III	Paper - III Statistical Methods -1	25	75
	IV	Paper IV Statistical Methods - II	25	75

CBCS SYLLABUS (Semester wise) 2015-16
BA/BSC I YEAR : STATISTICS SYLLABUS

(With Mathematics Combination)
Semester - I (I Year)
Paper - I Descriptive Statistics and Probability

Unit-I

Introduction to Statistics: Concepts of Primary and Secondary data. Methods of collection and editing of primary data, Secondary data. Designing a questionnaire and a schedule. Measures of Central Tendency - Mean, Median, Mode,Geometric Mean and Harmonic Mean.

Unit-II

Measures of dispersion: Range, Quartile Deviation, Mean Deviation and Standard Deviation. Descriptive Statistics -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,

Unit-IV

Probability theorems:Addition and multiplication theorems of probability for 2 and for n events. Boole's inequality and Baye's theorems and problems based on Baye's theorem.

Unit-V

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. Bivariate random variable - meaning, joint, marginal and conditional Distributions, independence of random variables.

Practicals - Semester – I

Conduct any 6 (Ms-exel is compulsory)

1. Computation of mean, median and mode.
2. Computation of quartile deviation.
3. Computation of mean deviation
4. Computation of Standard deviation.
5. Non-central moments and central moments, Sheppard corrections & Skewness based on moments and Kurtosis
6. MS-Excel methods for the above Serial numbers 1,2,3,4.

Note:

MS-Excel methods to be made mandatory for all the Semesters after proper training only to the teaching staff by the University concerned.

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 Publishing house.
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.

CBCS SYLLABUS (Semester wise) 2015-16
BA/BSC I YEAR : STATISTICS SYLLABUS

(With Mathematics Combination)
Semester - II CBCS (I Year)
Paper - II Mathematical Expectation and Probability Distributions

Unit-I

Mathematical expectation : Mathematical expectation(ME) of a random variable and 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 its properties. Chebyshev and cauchy - Schwartz inequalities.

Unit-II

Discrete Distributions : Binomial and Poisson distributions, their definitions, 1^{st} to 4 central moments, M.G.F, C.F, C.G.F, P.G.F, mean, variance, additive property if exists. Possion approximation to Binomial distribution.

Unit-III

Negative Binomial, geometric, hyper geometric distributions - Definitions, means, variances, M.G.F, C.F, C.G.F, P.G.F, reproductive property if exists. Binomial approximation to Hyper Geometric Distribution, Poisson approximation to Negative binomial distribution.

Unit-IV

Continuous Distributions : Rectangular, Exponential, Gamma, Beta Distributions of two kinds. Other properties such as mean , variance,M.G.F, C.G.F, C.F, reproductive property.

Unit - V

Normal Distribution: Definition, Importance, Properties, M.G.F, additive properties, Interrelation between Normal and Binomial, Normal &Poisson distribution. Cauchy Distribution .

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 Publishing house.
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 - Semester – II

Conduct any 6 (Ms-exel is compulsory)

1. Fitting of Binomial Distribution – Recurrence relation method.
2. Fitting of Poisson Distribution - Recurrence relation method.
3. Fitting of Negative Binomial Distribution.
4. Fitting of Geometric Distribution.
5. Fitting of Normal Distribution - Areas methods.
6. Fitting of Normal Distribution - Ordinates methods.
7. MS-Excel methods for the above Serial Numbers 1 and 2

BA/BSC II YEAR : STATISTICS SYLLABUS
(With Mathematics Combination)
Semester - III CBCS

Paper - III Statistical Methods

Unit-I

Correlation: Def.,scatter diagram ,its coefficient and its properties. , scatter diagram, computation of correlation coefficient for ungrouped data. spearman's rank correlation coefficient, properties of spearrman's correlation coefficients and problems.

Unit-II

Regression: simple linear regression, properties of regression coefficients. Regression lines, Concept of Correlation ratio, partial and multiple correlation coefficients, correlation verses regression and their problems.

Unit – III

Curve fitting: Method of least square - Fitting of linear, quadratic, Exponential and power curves and their problems.

Unit-IV

Attributes : Introduction, Nature, and consistency and mention its conditions. Independence and association of attributes, co-efficient of association, coefficients of contingency and their problems.

Unit –V

Exact sampling distributions: Concept of population, Parameter, random sample, statistic, sampling distribution, standard error. Statement and Properties of $\chi 2$, t, F distributions and their inter relationships.

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. Ravichandra Kum.
2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI.
3. Fundamentals of Mathematics statistics: VK Kapoor and SC Guptha.

Reference Books:

1. Outlines of statistics, Vol II : Goon Guptha, M.K.Guptha, Das Guptha B.
2. Introduction to Mathematical Statistics : Hoel P.G.

Practicals - Semester –III

Conduct any 6 (Ms-exel is compulsory)

1. Fitting of straight line.
2. Fitting of exponential curves.
3. Fitting of power curve.
4. Computation of correlation coefficient & Fitting of Regression lines.
5. Rank correlation coefficient.
6. Computation of Contingency coefficients.
7. MS-Excel methods any for the Serial Numbers 1,2,4,5.

BA/BSC II YEAR : STATISTICS SYLLABUS
(With Mathematics Combination)
Semester - IV CBCS.

Paper - IV : Statistical Inference

UNIT-I

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 methods of moments and maximum likelihood (M.L), properties of MLE's. Binomial, Poisson &Normal Population parameters estimate by ML method. Confidence intervals of the parameters of normal population.

UNIT II

Concepts of Statistical hypothesis: Null and alternative hypothesis, critical region, two types of errors, level of significance, power of a test. 1 tailed, 2 tailed tests, Neyman - Pearson's lemma. Examples in of Binomial. Poisson, Normal distributions.

Unit-III

Large Sample Tests : Large sample tests for single mean, two means, Single proportion, Two proportions, Standard Deviation of single and double samples and Fisher's Z transformation .

Unit-IV

Small sample tests: Tests of significance based on $\chi 2$, t and F. $\chi 2$-test for test for independence of attributes, t-test for single, double and paired tests, Variance Ratio Test(F-test).

Unit-V

Non-parametric tests - Advantages and Disadvantages. Two sample run test, Two sample Median test and Two sample sign 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. Ravichandra Kumar.
2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI.

REFERENCE BOOKS:

1. Fundamentals of Mathematics statistics : VK Kapoor and SC Guptha.
2. Outlines of statistics, Vol II : Goon Guptha, M.K.Guptha, Das Guptha B.
3. Introduction to Mathematical Statistics : Hoel P.G.

Practicals Semester – IV
Conduct any 6 (Ms-exel is compulsory)

1.Large sample tests for mean(s).
2. Large sample tests for proportion(s).
3. Large sample tests for standard deviation(s).
4.Large sample tests for Fisher's Z- transformation.
5.Small sample tests for Single and Doublet-test.
6.Small sample tests for Paired t-test.
7.F-Test.
8. Chi square test for independence of attributes.
9. Non-parametric testst – run test.
10. Non-parametric tests - median test.
11 Non-parametric tests - sign tests.
12.MS-Excel methods for the above Serial Numbers 1,2,3,4.(any one of above)

BA/BSC I YEAR : STATISTICS SYLLABUS
(For Non - Mathematics Combination)
Semester - I CBCS.
Paper-I Elementary Mathematics

Semester - II CBCS.

Paper - II Descriptive Statistics

Unit -1

Introduction to Statistics: Statistics Definition, application, scope, limitation, primary and secondary data, methods of collecting primary and secondary data. Statistical enquiry, questionnaire and schedule. Editing of data.

Unit – II

Classification and tabulation: classification of data, frequency distribution, rules of tabulation, simple and complex tables, single, double and manifold tables.

Unit – III

Diagrammatic Representation: Bar diagrams, square, rectangle, pie charts. Histogram, frequency polygon, o gives.

Unit-IV

Measures of Central Tendency: Mean, Median, Mode, G.M. &H.M, merits and demerits, finding median by graphic method, quartiles, deciles & percentiles.

Unit-V

Measures of Dispersion: Range, Q.D, S.D, M.D, Coefficient of variation, Lorenz cruve.

Text Books

1. Statistical methods - S.P. Gupta.
2. Fundamentals of Mathematical statistics - SC Gupta and V.K. Kapoor

Reference Books:

3. Quantitative Techniques1 –Sulthan Chand Publication

Practical - Semester – II

Conduct any 6 Practicals

1.Arithmetic Mean, Median, Mode, GM.HM.

2.Calculation of CV and its comparisons.

3.Bar diagrams.

4.Pie diagram.

5.Histogram.

6.Frequency polygon.

7.O give curves.

BA/BSC II YEAR : STATISTICS SYLLABUS
(For Non - Mathematics Combination)
Semester - III CBCS.
Paper - **III** Statistical Methods -**1**

Unit-I

Attributes: Classes, 2x2, manifold classification, class frequencies, ultimate classes frequencies, contingency tables, association and independence of attributes, consistency of data, coefficient of colligation.

Unit -II

Moments: Central and Non - Central moments, Sheppard's correction for moments for grouped data. Skewnes, kurtosis, and their measures.

Unit-III

Probability: Definitions of random experiment, outcome, sample space, event, mutually exclusive event, equally likely events, favourable events, classical, statistical and axiomatic definitions of probability. Addition and multiplication theorems for two events. Conditional probability, Baye's theorem statement and problem based on it.

Unit-IV

Random variable : Discrete - Probability mass function. Continuous Random Variable - Probability density function, distribution function of a R.V and properties.

Unit-V

Mathematical expectation: Basic results& properties of M.G.F, C.G.F,P. G.F, C.F

Text Book: 1.Statistical Methods by S.P.Gupta.

2. Fundamentals of Mathematical statistics - S.C. Gupta & V.K.Kapoor.

Reference books:

1. Sambavyatha - Telugu Academy.
2. Fundamentals of statistics - Goon, Gupta and Das Gupta.

Practicals - Semester - III

1. Non central Moments
2. Central Moments
3. Sheppard's corrections,
4. skewness and Kurtosis.
5. Coefficients of Association and colligation
6. Baye's theorem - Problems.

BA/BSC II YEAR : STATISTICS SYLLABUS
(For Non - Mathematics Combination)
Semester -IV CBCS.
Paper - **IV** Statistical Methods - **II**

Unit -1

Discrete distributions : Binomial. Poisson, Geometric distributions - definitions, means, variances and applications of these distributions. Additive property if exists. Simple problems.

Unit – II

Continuous distributions: Rectangular, Normal, exponential distributions - definitions and their properties. Simple problems.

Unit – III

Interpolation: Need and meaning of interpolation, graphical method. Newton's and Lagrange's formulas for interpolation.

Unit – IV

Curve fitting : principle of least squares - fitting of straight line, Parabola, exponential and power curves.

Unit - V

Correlation and Regression: Meaning, types, scatter diagrams, Correlation co-efficient, spearman's rank correlation. Regression lines, Regression coefficients and their properties

Text Books:

1.Fundamentals of Mathematical statistics - S.C. Gupta & V.K.Kapoor.
2.Statistical methods - S.P Gupta.

Reference Books:

1. Sambavyatha - Telugu Academy.
2. Fundamentals of statistics - Goon, Gupta and Das Gupta

Practicals - Semester –IV
Conduct any 6 Practicals

1.Fitting of Binomial by Direct method
2. Poisson Distribution by Direct method.
3.Fitting of Normal Distribution by Ordinates methods.
4.Fitting of Straight Line,
5. Fitting of Parabola,
6.Fitting of $y=ax^b$,
7.Fitting of $y=ab^x$,
8.Fitting of $y=ae^{bx}$
9.Correlation coefficient for ungrouped data.
10.Regression lines.

MODEL QUESTION PAPER

STATISTICS

(With Mathematics Combination)

Common to B.A / B.Sc

Time: 3hours Max.Marks:75

Section A

Answer any Five questions, each question carry 5 Marks 5x5=25 marks

1.

2.

3.

4.

5.

6.

7.

8

Section B

Answer all questions, each question carry 10 Marks 5x10=50 marks

UNIT - I

9(a)

Or

(b)

UNIT - II

10(a)

Or

(b)

UNIT – III

11(a)

Or

(b)

UNIT - IV

12(a)

Or

(b)

UNIT -V

13(a)

Or

(b)