DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2013-14

DEPARTMEMT : STATISTICS   PAPER - 1A : Descriptive Statistics & Probability Distributions
CLASS : I B.Sc   SEMISTER : I

Introduction
Concept of statistics, introduction and primary data, secondary data. Methods of collection and editing of data.
Designing a questionnaire and a schedule, sources and editing of data. Classification and tabulation of data.
Various measures of central tendency (mean , median, mode , Geometric mean and Harmonic mean) with simple examples.
Absolute and relative measures of dispersion (range, quartile deviation, mean deviation and standard deviation) with simple applications.
Importance of moments, central and non central moments and their interrelationships, Sheppard's corrections for group data.
Measures of skewers and kurtosis with real life examples. Examples on skewness and kurtosis
CAT I Examinations
Probability : Basic concepts in probability- deterministic and random experiments, trail, outcome, sample space, event and operations of events, mutually exclusive and exhaustive events and equally likely and favorable outcomes with examples.
Mathematical, statistical and axiomatic definitions of probability with merits and demerits. Properties of probability based on axiomatic definition.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2013-14

DEPARTMEMT : STATISTICS   PAPER - 1A : Descriptive Statistics & Probability   CLASS : I B.Sc
                SEMISTER : I

Conditional probability and independence of events. Addition and multiplication theorems for n events. Boole's inequality and Bayes' theorem. Problems on probability using counting methods and theorems.
Random Variables : Definitions of random variable, discrete and continuous random variables, functions of random variables, probability mass function and probability density function with illustrations. Distribution function and its properties. Transformation of one-dimensional random variable (simple 1-1 functions only).
Notion of bivariate random variable, bivariate distribution and statement of its properties. Joint, marginal and conditional distributions. Independence of random variables.
Mathematical Expectation :   Mathematical expectation of a function of a random variable. Raw and central moments and covariance using mathematical expectation with examples.
Addition and multiplication theorems of expectation. Definition of moment generating function (m.g.f) , cumulant generating function, probability generating function (p.g.f) and characteristic function (c.f) and statements of their properties with applications. Chebyshev's and Cauchy-Schwartz's inequalities and their applications.
Statement and applications of weak law of large numbers and central limit theorem for identically and independently distributed (i.i.d) random variables with finite variance.

DEPARTMEMT : STATISTICS   PAPER – 1B : Descriptive Statistics & Probability Distributions

CLASS : I B.Sc   SEMISTER :   II

Geometric and Hyper-geometric (Mean and variance only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, probability generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Continuous distributions : Rectangular and Normal distributions. Normal distribution as a limiting case of Binomial and Poisson distributions. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Normal distributions. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Normal distributions. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Exponential distribution. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Gamma, Beta of two kind (mean and variance only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Cauchy (definition and characteristic function only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2013-14

DEPARTMEMT : STATISTICS   PAPER - 2A : Statistical Inference   CLASS : II B.Sc
SEMISTER : III

Introduction
Theory of Attributes : Analysis of categorical data, independence and association and partial association of attributes,
Consistency of data , Conditions for consistency of two and three attributes cases,various measures of association
Yule's coefficient of association. coefficient of colligation for two way data and relation between them.
Curve fitting : Principle of least squares. fitting of linear and examples.
fitting of Second degree, nth degree, power curves and examples. fitting of exponential curves and examples.
Correlation : Bivariate data, correlation coefficient and its properties
CAT I Examinations
scattered diagram, Karl Pearson Correlation coefficient for grouped data and ungrouped data.
Spearman's rank correlation coefficient and its properties, Correlation ratio. Concepts of Partial and Multiple Correlation Coefficients (only for three variables) and its properties.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2013-14

DEPARTMEMT : STATISTICS   PAPER - 2A : Statistical Inference   CLASS : II B.Sc
SEMISTER : III

Regression : Principle of least squares, Simple linear regression, properties of regression coefficients and correlation verses regression,
Exact sampling distributions : Statement and properties of chi-square, t and F distributions and their interrelationships.
Point estimation : Concepts of population, parameter, random sample, statistic, sampling distribution and standard error and standard error.
Independence of sample mean and variance in random sample from normal distributions, concept of bias and mean square error of an estimate. Criteria of Good estimator – consistency, unbiasedness, efficiency and sufficiency with examples.
Statement of Neyman's Factorization theorem, derivations of sufficient statistics in case of Binomial, Poisson, Normal and exponential (one parameter only) distributions. Estimation by method of moments,
Maximum likelihood (ML), statements of asymptotic properties of MLE. Concept of interval estimation.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabusfor the Academic Year 2013-14

DEPARTMEMT : STATISTICS   PAPER – 2B : Statistical Inference   CLASS : II B.Sc
SEMISTER : IV

Testing of Hypothesis : Concepts of statistical hypothesis, null and alternative hypothesis, critical region, two types of errors,
level of significance and power of a test, one and two tailed tests
test function(non randomized and randomized). Neyman-Pearson's fundamental lemma for randomized tests.
Examples in case of Binomial, Poisson, Exponential and Normal distributions and their powers..
Use of central limit theorem in testing. Likelihood ratio test – test for single variance of Normal Population
Large sample tests and confidence intervals for mean(s),
Large sample tests and confidence intervals for proportion(s) and standard deviation(s)

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2013-14

DEPARTMEMT : STATISTICS   PAPER – 2B : Statistical Inference   CLASS : II B.Sc
        SEMISTER : IV

Large sample tests based on standard deviation(s)
Small Sample tests : Tests of significance based on Chi-square
Small Sample tests t-test for single mean , difference of means, paired t-test, observed sample correlation coefficient. F-test for difference of variances.
Non-parametric tests : Their advantages and disadvantages, comparison with parametric tests.   One sample test : 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.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2014-15

DEPARTMEMT : STATISTICS   PAPER - 1A : Descriptive Statistics & Probability Distributions

CLASS : I B.Sc   SEMISTER : I

Introduction
Introduction
Bride Course
Concept of statistics, introduction and primary data, secondary data. Methods of collection and editing of data.
Designing a questionnaire and a schedule, sources and editing of data. Classification and tabulation of data.
Various measures of central tendency (mean , median, mode , Geometric mean and Harmonic mean) with simple examples.
Absolute and relative measures of dispersion (range, quartile deviation, mean deviation and standard deviation) with simple applications.
Importance of moments, central and non central moments and their interrelationships, Sheppard's corrections for group data.
Measures of skewness and kurtosis with real life examples. Examples on skewness and kurtosis
Probability : Basic concepts in probability- deterministic and random experiments, trail, outcome, sample space, event and operations of events, mutually exclusive and exhaustive events and equally likely and favorable outcomes with examples.
Mathematical, statistical and axiomatic definitions of probability with merits and demerits. Properties of probability based on axiomatic definition.
Conditional probability and independence of events. Addition and multiplication theorems for n events. Boole's inequality and Bayes' theorem. Problems on probability using counting methods and theorems.

DEPARTMEMT : STATISTICS   PAPER - 1A : Descriptive Statistics & Probability CLASS : I B.Sc
SEMISTER : I

Random Variables : Definitions of random variable, discrete and continuous random variables, functions of random variables, probability mass function and probability density function with illustrations. Distribution function and its properties. Transformation of one-dimensional random variable (simple 1-1 functions only).
Notion of bivariate random variable, bivariate distribution and statement of its properties. Joint, marginal and conditional distributions. Independence of random variables.
Mathematical Expectation :   Mathematical expectation of a function of a random variable. Raw and central moments and covariance using mathematical expectation with examples.
Addition and multiplication theorems of expectation. Definition of moment generating function (m.g.f) , cumulant generating function, probability generating function (p.g.f) and characteristic function (c.f) and statements of their properties with applications.
Chebyshev's and Cauchy-Schwartz's inequalities and their applications. Statement and applications of weak law of large numbers
central limit theorem for identically and independently distributed (i.i.d) random variables with finite variance.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabusfor the Academic Year 2014-15

DEPARTMEMT : STATISTICS   PAPER – 1B : Descriptive Statistics & Probability Distributions
CLASS : I B.Sc   SEMISTER : II

Descrete distributions : Uniform, Bernoulli, (Mean and variance only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, probability generating function, characteristic function and moments up to fourth order and their real life applications.
Binomial (Mean and variance only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, probability generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Binomial (Mean and variance only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, probability generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Negative binomial, Geometric (Mean and variance only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, probability generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Geometric and Hyper-geometric (Mean and variance only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, probability generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Continuous distributions : Rectangular and Normal distributions. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Normal distributions. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Exponential distribution. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Gamma, Beta of two kind (mean and variance only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists.
Cauchy (definition and characteristic function only) distributions. Properties of these distributions such as moment generating function, cumulant generating function, characteristic function and moments up to fourth order and their real life applications. Reproductive property wherever exists

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabusfor the Academic Year 2014-15

DEPARTMEMT : STATISTICS   PAPER - 2A :Statistical Inference   CLASS :II B.Sc
SEMISTER : III

Introduction
Bride Course
Theory of Attributes : Analysis of categorical data, independence and association and partial association of attributes,
Consistency of data , Conditions for consistency of two and three attributes cases,
various measures of association
Yule's coefficient of association. coefficient of colligation for two way data and relation between them.
Curve fitting : Principle of least squares. fitting of linear and examples.
fitting of Second degree, nth degree, power curves and examples. fitting of exponential curves and examples.
Correlation : Bivariate data, correlation coefficient and its properties
scattered diagram, Karl Pearson Correlation coefficient for grouped data and ungrouped data.
Spearman's rank correlation coefficient and its properties , Correlation ratio. Concepts of Partial and Multiple Correlation Coefficients (only for three variables) and its properties.
Regression : Principle of least squares, Simple linear regression, properties of regression coefficients and correlation verses regression,

DEPARTMEMT : STATISTICS   PAPER - 2A :   Statistical Inference   CLASS : II B.Sc
SEMISTER : III

Exact sampling distributions : Statement and properties of chi-square, t and F distributions and their interrelationships.
Point estimation : Concepts of population, parameter, random sample, statistic, sampling distribution and standard error and standard error.
Independence of sample mean and variance in random sample from normal distributions, concept of bias and mean square error of an estimate. Criteria of Good estimator – consistency, unbiasedness, efficiency and sufficiency with examples.
Dusara vacation
Statement of Neyman's Factorization theorem, derivations of sufficient statistics in case of Binomial, Poisson, Normal and exponential (one parameter only) distributions. Estimation by method of moments, Maximum likelihood (ML), statements of asymptotic properties of MLE. Concept of interval estimation.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2014-15

DEPARTMEMT : STATISTICS   PAPER – 2B : Statistical Inference   CLASS : II B.Sc
SEMISTER : IV

Testing of Hypothesis : Concepts of statistical hypothesis, null and alternative hypothesis, critical region, two types of errors,
level of significance and power of a test, one and two tailed tests
test function(non randomized and randomized). Neyman-Pearson's fundamental lemma for randomized tests.
Examples in case of Binomial, Poisson, Exponential and Normal distributions and their powers.
Use of central limit theorem in testing. Likelihood ratio test – test for single variance of Normal Population Large sample tests and confidence intervals for mean(s),
Large sample tests and confidence intervals for proportion(s) and standard deviation(s)

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2014-15

DEPARTMEMT : STATISTICS   PAPER – 2B : Statistical Inference   CLASS : II B.Sc   SEMISTER : IV

Large sample tests based on standard deviation(s)
Small Sample tests : Tests of significance based on Chi-square
Small Sample tests t-test for single mean , difference of means, paired t-test, observed sample correlation coefficient. F-test for difference of variances.
Non-parametric tests : Their advantages and disadvantages, comparison with parametric tests.   One sample test : 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.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2015-16

DEPARTMEMT : STATISTICS   PAPER - 1A : Descriptive Statistics & Probability CLASS : I B.Sc
        SEMISTER : I

Introduction
Bridge Course
Concept of primary and secondary data. Methods of collection and editing of primary data. Designing a questionnaire and a schedule.
Concept of primary and secondary data. Methods of collection and editing of primary data. Designing a questionnaire and a schedule.
Measures of central tendency -mean , median, mode , Geometric mean and Harmonic mean with examples.
Measures of dispersion : range, quartile deviation, mean deviation and standard deviation with applications.
Central and non central moments and their interrelationships, Sheppard's corrections for moments. Skewness and Kurtosis with examples.
Probability :   Basic concepts in probability- random experiments, trail, outcome, sample space, event , mutually exclusive and exhaustive events, equally likely and favorable outcomes.
Mathematical, statistical and axiomatic definitions of probability.
Conditional probability and independence of events.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2015-16

DEPARTMEMT : STATISTICS   PAPER - 1A : Descriptive Statistics & Probability   CLASS : I B.Sc   SEMISTER : I

Addition and multiplication theorems of probability 2 and for n events.
Boole's inequality. Bayes' theorem and Problems on Bayes' theorem
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
Mathematical Expectation : Mathematical expectation of a random variable

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2015-16

DEPARTMEMT : STATISTICS   PAPER – 1B : Mathematical Expectation & Probability Distributions
CLASS : I B.Sc   SEMISTER : II

Mathematical Expectation : Mathematical expectation 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, c.f* , *p.g.f* its properties. Chebyshev,s and Cauchy – Schwartz inequalities.
Discrete Distributions : Binomial distribution definition, 1st to 4th central moments, *m.g.f* , *c.g.f, c.f* , *p.g.f* , mean , variance , additive property if exists.
Discrete Distributions : Poisson distribution definition, 1st to 4th central moments, *m.g.f* , *c.g.f, c.f* , *p.g.f* , mean , variance , additive property if exists.
Poisson approximation to Binomial distribution. Geometric distribution definition, mean , variance , *m.g.f* , *c.g.f, c.f* , *p.g.f* , reproductive property if exists.
Negative Binomial distribution definition, mean , variance , *m.g.f* , *c.g.f, c.f* , *p.g.f* , reproductive property if exists. Poisson approximation to Negative Binomial distribution. Hyper geometric distribution definition, mean , variance

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(*A College with Potential for Excellence*)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2015-16

DEPARTMEMT : STATISTICS   PAPER – 1B : Mathematical Expectation & Probability Distributions
CLASS : I B.Sc   SEMISTER : II

Hyper geometric distribution definition, *m.g.f , c.g.f, c.f , p.g.f* , reproductive property if exists. Binomial approximation to Hyper geometric distribution.Continuous Distributions :   Rectangular , Exponential distributions - mean , variance , *m.g.f , c.g.f, c.f , p.g.f* and reproductive property if exists.
Continuous Distributions : Gamma and Beta distributions of I st and II nd - mean , variance , *m.g.f , c.g.f, c.f , p.g.f* and reproductive property if exists.
Normal distribution – Definition, importance, properties, *m.g.f* , additive properties
Interrelation between Normal and Binomial, Normal and Poisson distributions. Cauchy distribution.

DEPARTMEMT : STATISTICS   PAPER - 2A : Statistical Inference   CLASS : II B.Sc
SEMISTER : III

Introduction
Bride Course
Theory of Attributes : Analysis of categorical data, independence and association and partial association of attributes,
Consistency of data , Conditions for consistency of two and three attributes cases,
various measures of association
Yule's coefficient of association. coefficient of colligation for two way data and relation between them.
Curve fitting : Principle of least squares. fitting of linear and examples.
fitting of Second degree, nth degree, power curves and examples. fitting of exponential curves and examples.
Correlation : Bivariate data, correlation coefficient and its properties
scattered diagram, Karl Pearson Correlation coefficient for grouped data and ungrouped data.
Spearman's rank correlation coefficient and its properties , Correlation ratio. Concepts of Partial and Multiple Correlation Coefficients (only for three variables) and its properties.

DEPARTMEMT : STATISTICS   PAPER - 2A :   Statistical Inference   CLASS : II B.Sc

SEMISTER :   III

Regression : Principle of least squares, Simple linear regression, properties of regression coefficients and correlation verses regression,
Exact sampling distributions : Statement and properties of chi-square, t and F distributions and their interrelationships.
Point estimation : Concepts of population, parameter, random sample, statistic, sampling distribution and standard error and standard error.
Independence of sample mean and variance in random sample from normal distributions, concept of bias and mean square error of an estimate. Criteria of Good estimator – consistency, unbiasedness, efficiency and sufficiency with examples.
Dusara vacation
Statement of Neyman's Factorization theorem, derivations of sufficient statistics in case of Binomial, Poisson, Normal and exponential (one parameter only) distributions. Estimation by method of moments, Maximum likelihood (ML), statements of asymptotic properties of MLE. Concept of interval estimation.
Testing of Hypothesis

DEPARTMEMT : STATISTICS   PAPER – 2B : Statistical Inference   CLASS : II B.Sc
SEMISTER : IV

Testing of Hypothesis : Concepts of statistical hypothesis, null and alternative hypothesis, critical region, two types of errors,
level of significance and power of a test, one and two tailed tests
test function(non randomized and randomized). Neyman-Pearson's fundamental lemma for randomized tests.
Examples in case of Binomial, Poisson, Exponential and Normal distributions and their powers.
Use of central limit theorem in testing. Likelihood ratio test – test for single variance of Normal Population Large sample tests and confidence intervals for mean(s),
Large sample tests and confidence intervals for proportion(s) and standard deviation(s)

DEPARTMEMT : STATISTICS   PAPER – 2B : Statistical Inference   CLASS : II B.Sc
SEMISTER : IV

Large sample tests based on standard deviation(s)
Small Sample tests : Tests of significance based on Chi-square
Small Sample tests t-test for single mean , difference of means, paired t-test, observed sample correlation coefficient. F-test for difference of variances. Non-parametric tests : Their advantages and disadvantages, comparison with parametric tests.
One sample test : 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.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2016-17

DEPARTMEMT : STATISTICS PAPER - 1A : Descriptive Statistics & Probability   CLASS : I B.Sc
SEMISTER : I

Introduction
Introduction
Introduction
Bridge Course
Concept of primary and secondary data. Methods of collection and editing of primary data. Designing a questionnaire and a schedule.
Measures of central tendency -mean , median, mode , Geometric mean and Harmonic mean with examples.
Measures of dispersion : range, quartile deviation, mean deviation and standard deviation with applications.
Central and non central moments and their interrelationships, Sheppard's corrections for moments. Skewness and Kurtosis with examples.
CAT I Examinations
Probability : Basic concepts in probability- random experiments, trail, outcome, sample space, event , mutually exclusive and exhaustive events, equally likely and favorable outcomes.
Mathematical, statistical and axiomatic definitions of probability.   Conditional probability and independence of events.
Addition and multiplication theorems of probability 2 and for n events. Boole's inequality. Bayes' theorem and Problems on Bayes' theorem.

DEPARTMEMT : STATISTICS   PAPER - 1A : Descriptive Statistics & Probability   CLASS : I B.Sc   SEMISTER : I

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
Mathematical Expectation
Mathematical Expectation : Mathematical expectation of a random variable
Mathematical Expectation and definitions

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2016-17

DEPARTMEMT : STATISTICS   PAPER – 1B : Mathematical Expectation & Probability Distributions
CLASS : I B.Sc   SEMISTER : II

Mathematical Expectation : Mathematical expectation 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, c.f , p.g.f* its properties. Chebyshev,s and Cauchy – Schwartz inequalities.
Discrete Distributions : Binomial distribution definition, 1st to 4th central moments, *m.g.f , c.g.f, c.f , p.g.f* , mean , variance , additive property if exists.
Discrete Distributions : Poisson distribution definition, 1st to 4th central moments, *m.g.f , c.g.f, c.f , p.g.f ,* mean , variance , additive property if exists.
Poisson approximation to Binomial distribution. Geometric distribution definition, mean , variance , *m.g.f , c.g.f, c.f , p.g.f ,* reproductive property if exists.
Negative Binomial distribution definition, mean , variance , *m.g.f , c.g.f, c.f , p.g.f ,* reproductive property if exists. Poisson approximation to Negative Binomial distribution. Hyper geometric distribution definition, mean , variance

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2016-17

DEPARTMEMT : STATISTICS   PAPER – 1B : Mathematical Expectation & Probability Distributions
CLASS : I B.Sc   SEMISTER : II

Hyper geometric distribution definition, *m.g.f* , *c.g.f, c.f* , *p.g.f* , reproductive property if exists. Binomial approximation to Hyper geometric distribution.Continuous Distributions :   Rectangular , Exponential distributions - mean , variance , *m.g.f* , *c.g.f, c.f* , *p.g.f* and reproductive property if exists.
Continuous Distributions : Gamma and Beta distributions of I st and II nd - mean , variance , *m.g.f* , *c.g.f, c.f* , *p.g.f* and reproductive property if exists.
Normal distribution – Definition, importance, properties, *m.g.f* , additive properties Interrelation between Normal and Binomial, Normal and Poisson distributions. Cauchy distribution.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2016-17

DEPARTMEMT : STATISTICS   PAPER - 2A : Statistical Methods   CLASS : II B.Sc
SEMISTER : III

Review the results
Introduction
Bridge Course
Definitions of Curve fitting and least squares.
Curve fitting : Method of least square, Fitting of linear, quadratic curves
exponential and power curves and their problems.
Correlation : Definition., its coefficient and its properties., Scatter diagram,
computation of correlation coefficient for grouped and ungrouped data.
Spearman's rank correlation coefficient, properties of Spearman's correlation coefficient and problems.
CAT I Examinations
Regression: Simple linear regression, regression lines and regression coefficients, and properties of regression coefficients,
concept of Correlation Ratio, multiple and partial correlation coefficients, Correlation verses regression and their problems.
Attributes : Introduction, Nature, Consistency and mention its conditions, independence and association of attributes,

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2016-17

DEPARTMEMT : STATISTICS   PAPER - 2A : Statistical Methods   CLASS : II B.Sc
      SEMISTER :   III

coefficient of association, coefficients of contingency and their problems. Exact sampling distributions: Concepts of population, Parameter, random sample, statistic, sampling distribution and standard error.
Statement and properties of chi-squire, t and F distributions. Interrelationships of chi-squire, t and F distributions

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2016-17

DEPARTMEMT : STATISTICS   PAPER – 2B : Statistical Inference   CLASS : II B.Sc
       SEMISTER : IV

Review the Semester End Examinations
Theory of Estimation.
Theory of Estimation :   Estimation of a parameter, criteria of a good estimator – unbiasedness, consistency, efficiency and sufficiency.
Statement of Neyman's factorization theorem.
Estimation of parameters by the methods of moments and maximum likelyhood (M.L), properties of MLE's.
Binomial, Poisson and Normal population parameters estimate by ML method.
Confidence intervals of the parameters of normal population. Concepts of Statistical hypothesis : Null and alternative hypothesis, critical region, two types of errors, level of significance , power of a test, I tailed and II tailed tests
Neyman – Pearson's lemma. Examples in on Binomial , Poisson and Normal distributions.
Large sample tests for single mean, two means of single and double samples.
Large sample tests for single proportion, two proportions of single and double samples.
Pongal Holidays
Large sample tests for Standard deviation of single and double samples and Fisher's Z transformation.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2016-17

DEPARTMEMT : STATISTICS   PAPER – 2B : Statistical Inference   CLASS : II B.Sc   SEMISTER : IV

Small sample tests : Tests of significance based on chi square , Chi-square – test for goodness of fit, independence of attributes and variance test. t-test for single, double and paired tests, Variance Ratio (F) test.
Non-Parametric tests : Advantages and Disadvantages. Two sample run test. Two sample Median test and Two sample sign test.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2017-18

DEPARTMEMT : STATISTICSPAPER - 1A : Descriptive Statistics & Probability   CLASS : I B.Sc
          SEMISTER : I

Introduction
Introduction
Bridge Course
Bridge Course
Concept of primary and secondary data. Methods of collection and editing of primary data. Designing a questionnaire and a schedule.
Measures of central tendency -mean , median, mode , Geometric mean and Harmonic mean with examples.
Measures of dispersion : range, quartile deviation, mean deviation and standard deviation with applications.
Central and non central moments and their interrelationships, Sheppard's corrections for moments. Skewness and Kurtosis with examples.
Probability : Basic concepts in probability- random experiments, trail, outcome, sample space, event , mutually exclusive and exhaustive events, equally likely and favorable outcomes.
Mathematical, statistical and axiomatic definitions of probability. Conditional probability and independence of events.
CAT Examinations
Addition and multiplication theorems of probability 2 and for n events. Boole's inequality. Bayes' theorem and Problems on Bayes' theorem.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(*A College with Potential for Excellence*)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2017-18

DEPARTMEMT : STATISTIC PAPER - 1A : Descriptive Statistics & Probability   CLASS : I B.Sc
           SEMISTER : I

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 and Revision
Mathematical Expectation : Mathematical expectation of a random variable

DEPARTMEMT : STATISTICS   PAPER – 1B : Mathematical Expectation & Probability Distributions

CLASS : I B.Sc   SEMISTER : II

Mathematical Expectation : Mathematical expectation 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, c.f , p.g.f* its properties. Chebyshev,s and Cauchy – Schwartz inequalities.
Discrete Distributions : Binomial distribution definition, 1st to 4th central moments, *m.g.f , c.g.f, c.f , p.g.f ,* mean , variance , additive property if exists.
Discrete Distributions : Poisson distribution definition, 1st to 4th central moments, *m.g.f , c.g.f, c.f , p.g.f ,* mean , variance , additive property if exists.
Poisson approximation to Binomial distribution. Geometric distribution definition, mean , variance , *m.g.f , c.g.f, c.f , p.g.f ,* reproductive property if exists.
Negative Binomial distribution definition, mean , variance , *m.g.f , c.g.f, c.f , p.g.f ,* reproductive property if exists. Poisson approximation to Negative Binomial distribution. Hyper geometric distribution definition, mean , variance

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2017-18

DEPARTMEMT : STATISTICS   PAPER – 1B : Mathematical Expectation & Probability Distributions
CLASS : I B.Sc   SEMISTER : II

Hyper geometric distribution definition, *m.g.f , c.g.f, c.f , p.g.f* , reproductive property if exists. Binomial approximation to Hyper geometric distribution.Continuous Distributions :   Rectangular , Exponential distributions - mean , variance , *m.g.f , c.g.f, c.f , p.g.f* and reproductive property if exists.
Continuous Distributions : Gamma and Beta distributions of I st and II nd - mean , variance , *m.g.f , c.g.f, c.f , p.g.f* and reproductive property if exists.
Normal distribution – Definition, importance, properties, *m.g.f* , additive properties
Interrelation between Normal and Binomial, Normal and Poisson distributions. Cauchy distribution.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2017-18

DEPARTMEMT : STATISTICS   PAPER - 2A : Statistical Methods   CLASS : II B.Sc
SEMISTER : III

Introduction
Introduction
Bridge Course
Curve fitting : Method of least square, Fitting of linear, quadratic curves
Curve fitting : Method of least square, Fitting of linear, quadratic curves
exponential and power curves and their problems.
Correlation : Definition., its coefficient and its properties., Scatter diagram,
computation of correlation coefficient for grouped and ungrouped data.
Spearman's rank correlation coefficient, properties of Spearman's correlation coefficient and problems.
Regression: Simple linear regression, regression lines and regression coefficients, and properties of regression coefficients,
concept of Correlation Ratio, multiple and partial correlation coefficients, Correlation verses regression and their problems.
Attributes : Introduction, Nature, Consistency and mention its conditions, independence and association of attributes,

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2017-18

DEPARTMEMT : STATISTICS   PAPER - 2A : Statistical Method CLASS : II B.Sc
     SEMISTER :   III

coefficient of association, coefficients of contingency and their problems.
Exact sampling distributions: Concepts of population, Parameter, random sample, statistic, sampling distribution and standard error.
Statement and properties of chi-squire, t and F distributions
Interrelationships of chi-squire, t and F distributions

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2017-18

DEPARTMEMT : STATISTICS   PAPER – 2B : Statistical Inference   CLASS : II B.Sc
SEMISTER : IV

Theory of Estimation : Estimation of a parameter, criteria of a good estimator – unbiasedness, consistency, efficiency and sufficiency. Statement of Neyman's factorization theorem.
Estimation of parameters by the methods of moments and maximum likelyhood (M.L), properties of MLE's. Binomial, Poisson and Normal population parameters estimate by ML method.
Confidence intervals of the parameters of normal population. Concepts of Statistical hypothesis : Null and alternative hypothesis, critical region, two types of errors, level of significance , power of a test, I tailed and II tailed tests
Neyman – Pearson's lemma. Examples in on Binomial , Poisson and Normal distributions.
Large sample tests for single mean, two means of single and double samples.
Large sample tests for single proportion, two proportions of single and double samples.
Large sample tests for Standard deviation of single and double samples and Fisher's Z transformation.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2017-18

DEPARTMEMT : STATISTIC PAPER – 2B : Statistical Inference   CLASS : II B.Sc
         SEMISTER : IV

Small sample tests : Tests of significance based on chi square , Chi-square – test for goodness of fit, independence of attributes and variance test.
Small sample tests : Tests of significance based on t and F. t-test for single, double and paired tests, Variance Ratio (F) test.
Non-Parametric tests : Advantages and Disadvantages. Two sample run test.
Non-Parametric tests : Two sample Median test and Two sample sign test.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2017-18

DEPARTMEMT : STATISTICS PAPER – 3B :   Applied Statistics   CLASS : III B.Sc
SEMISTER :   VI

Time Series : Time series and its components with illustrations, additive, multiplicative and mixed models. Determination of trend by least squares, Moving average methods.
Growth curves and their fitting. Modified exponential, Compertz and logistic curves Determination of seasonal indices by ratio to moving average method.
Determination of seasonal indices by ratio to trend and link relative methods. Official Statistics : Functions and organizations of CSO and NSSO. Agricultural statistics area by yield statistics.
Index Numbers :   Concept, construction, uses and limitations of simple and weighted Index numbers.
Lasperyer's, Paasche's and Fisher's index numbers. Criterion of a good index number, problems involved in the construction of index number.
Reversal test, Fisher's index as ideal index number, Reversal tests, Fixed and Chain base index numbers.

DANTULURI NARAYANA RAJU COLLEGE (AUTONOMOUS)
(A College with Potential for Excellence)
Bhimavaram, W.G.Dist., A.P
Syllabus for the Academic Year 2017-18

DEPARTMEMT : STATISTICS   PAPER – 3B : Applied Statistics   CLASS : II B.Sc
          SEMISTER : VI

Cost of living index numbers and whole sale price index numbers. Base shifting , slicing and deflation of index numbers.
Demand Analysis : Introduction, Demand and Supply, Price elastics of supply and demand. Methods of determining demand and supply curves.
Leontief's , Pigeon's methods of determining demand curve form time serious data, limitations of these methods
Pigeon's method time series data. Pareto law of income distribution curves of concentration.