DEPARTMENT OF STATISTICS

M.Sc. Statistics (Five Year Integrated) Programme

19IENC12 - English Through Literature – I (Prose)

Course Outcomes:

CO1: Competency in communication both in written and oral skills
CO2: Fluency in the English language
CO3: Knowledge about construction of sentence structures
CO4: English Vocabulary to use the English language effectively
CO5: Proficiency in the four communication skills

19ISTC14 - Descriptive Statistics

Course Outcomes:

CO1: Study the basic concepts of statistics and data.
CO2: Have knowledge on various diagrams and graphs.
CO3: Calculate various measures of averages and dispersion.
CO4: Study the various measures of skewness and kurtosis.
CO5: Study the measures of bivariate data.

19ISTA15 - Ancillary-I : Mathematics–I

Course Outcomes:

CO1: Study the series of number system.
CO2: Understand the various the matrix operations and types.
CO3: Study the trigonometric and hyperbolic functions.
CO4: Understand the differentiations methods.
CO5: Study the maximum and minimum.

19IENC22 – English Thorugh Literature – II (Poetry)

Course Outcomes:

CO1: Competency in communication, both in written and oral skills
CO2: Fluency in English language
CO3: Knowledge about construction of sentence structures
CO4: Vocabulary to use the English language effectively
CO5: Acquire the aesthetic sense for appreciating poetry

19ISTC24 - Real Analysis And Matrices

Course Outcomes:

CO1: Understand the sequence of real numbers and related results.
CO2: Understand the series of real numbers and related results.
CO3: Study the limits and continuity.
CO4: Understand the operations of matrix algebra.
CO5: Solve problems of linear homogeneous equations.

19ISTA25 - Ancillary-I : Mathematics–II

Course Outcomes:

CO1: Solve exercise of integration of type I
CO2: Solve exercise of integration of type II
CO3: Understand the plane curves
CO4: Solving problems of vector differentiations.
CO5: Solving problems of vector integrations.

19IENC32 - English Through Literature – III (Drama)

Course Outcomes:

CO1: Obtain a literary acumen to answer MCQs of NET/SET Examinations and other competitive examination

CO2: Appreciate conversational English

CO3: Recognize the dramatic elements of Shakespearean dramas

CO4: Use punctuations and capitals effectively in their composition

CO5: Recognize the elements of the spoken discourses

19ISTC33 - Basic Probability Theory

Course Outcomes:

CO1: Study the various concepts of probability

CO2: Understand a random variables probability functions.

CO3: Study the bivariate probability functions.

CO4: Understand the mathematical expectations and related functions.

CO5: Study the law of large numbers.

19ISTC34 - Introduction To C++

Course Outcomes:

CO2: Understand the concepts of pointers and structures.

CO3: Study the objects and functions of C++

CO4: Study the inheritance of C++

CO5: Develop programs related to statistical problems.

19ISTP 35 - Statistics Practical – I

Course Outcomes:

CO1: Calculate variate statistical measures.

CO2: Solve problems of matrices.

CO3: Fit binomial, Poisson and normal distributions.

19ISTA36 - Ancillary-II : Demography-I

Course Outcomes:

CO1: Understand the basic concepts of demography.

CO2: Study the area of fertility.

CO3: Have thorough knowledge mortality and morbidity.

CO4: Understand the use of life table.

CO5: Have idea on migration concepts.

19IENC42 – English Through Literature – IV (Short Story)

Course Outcomes:

CO1: Use more vocabularies while writing

CO2: Learner can ensure about the history and development

CO3: The learner has a development in flow of writing

CO4: Students can come up with new ideas while reading stories from different perspectives.

CO5: Write in a style appropriate for communicative purposes

19ISTC43 - Probability Distributions

Course Outcomes:

CO1: Understand the binomial Poisson distributions.

CO2: Study the various discrete distributions.
CO3: Study the various continuous distributions.
CO4: Study the beta and gama distributions.
CO5: Study the t,F and chi-square distributions.

19ISTP44 - Statistics Practical – II (Computer Based Practical)
Course Outcomes:
CO1: Understand the various documentation commands of MS-WORD
CO2: Prepare programs using C++ for statistical problems
CO3: Prepare programs using C++ for matrix operations.

19ISTA45 - Ancillary-II : Demography-II
Course Outcomes:
CO1: To study the use and applications of life table.
CO2: Estimate and fitting of fertility models.
CO3: Estimate the adult mortality and child mortality.
CO4: Fit migration models using vital statistics method.
CO5: Study the population projections in demographic analysis.

19ISTC51 - Sampling Techniques
Course Outcomes:
CO1: Understand the concepts of census and sample surveys.
CO2: Study the concepts of simple random sampling.
CO3: Study the concepts of stratified random sampling.
CO4: Study the concepts of systematic sampling
CO5: Study the functions of national sample survey.

19ISTC52 - Statistical Methods For Data Analysis
Course Outcomes:
CO1: Understand the various concepts of statistical tests and to apply large sample tests.
CO2: Apply the exact tests for research problems.
CO3: Apply the various chi-square tests .
CO4: Apply the multiple regression analysis and multivariate tests for real life problems
CO5: Apply the non-parametric tests for sample data.

19ISTC53 - Statistical Inference
Course Outcomes:
CO1: Understand the basic concepts and criteria of point estimators.
CO2: Study the various types and methods of estimation.
CO3: Understand the concepts of interval estimation.
CO4: Study the basic concepts of statistical hypotheses testing.
CO5: Understand the Neyman-Pearson Lemma and solving problems

19ISTC54 - Elements Of Quality Control
Course Outcomes:
CO1: Understand the concepts of control charts for variables.
CO2: Understand the concepts of control charts for attributes.
CO3: Study the concepts of acceptance sampling.
CO4: Study the single and double sampling plans.
CO5: Study the acceptance sampling for variables.

19ISTP55 - Statistics Practical – III (Calculater Based Statistics Practical)
Course Outcomes:
CO1: Apply various statistical tests for sample data
CO2: Observe data using simple random sampling.
CO3: Calculate time series components.
CO4: Calculate problems of index numbers.
CO5: Carryout anova tests for given data.

19ISTC61 - Experimental Designs
Course Outcomes:
CO1: Understand the basic concepts of experimental designs.
CO2: Study the various basic designs.
CO3: Understand the use of various multiple comparison tests.
CO4: Study the missing plot techniques of basic designs.
CO5: Study the factorial experiments and confounding.

19ISTC62 - Official And Applied Statistics
Course Outcomes:
CO1: Understand the present official statistical system.
CO2: Study the various concepts of vital statistics.
CO3: Study the various types of index numbers.
CO4: Study the various components of time series models.
CO5: Apply the tools of time series concepts for given data.

19ISTC63 – Econometrics
Course Outcomes:
CO1: Understand the basic concepts of econometric models.
CO2: Study the linear model
CO3: Study the adequacy and checking of models.
CO4: Study the concept of autocorrelation and their tests.
CO5: Study the concept of multicollinearity

19ISTC64 - Optimization Techniques
Course Outcomes:
CO1: Understand to solve the problems of LPP.
CO2: Study the concepts of transportation and assignment problems.
CO3: Study the different types of problems of game theory.
CO4: Study the concepts of replacement problems.
CO5: Understand the concepts of network analysis.

19ISTP65 - Statistics Practical – IV (Computer Based Practical)
Course Outcomes:
CO1: Solve statistical problems using excel
CO2: Solve statistical problems and carryout analysis using SX and SPSS.
CO3: Prepare power point presentations

19ISTC71 - Linear Algebra And Matrix Theory
Course Outcomes:
CO1: Solve problems in matrices and quadratic forms

CO2: Understand the concepts of vector space
CO3: Understanding various matrix transformations
CO4: Solving problems in linear equations
CO5: Obtain the eigen values and eigen vectors

19ISTC72 - Measure And Probability Theory
Course Outcomes:
CO1: Understand the various types of measures
CO2: Study the theorems relating to measures
CO3: Apply the use of zero one laws
CO4: Application of theorems on random variables
CO5: Utilize the law of large numbers in research studies

19ISTC73 - Sampling Theory
Course Outcomes:
CO1: Study the various criteria of estimators
CO2: Understand the concepts of sufficiency and completeness
CO3: Derive different inequalities
CO4: Understand the various methods of estimation and interval estimation
CO5: Study the Bayes estimation

19ISTP74 – Statistics Practical – V (Calculator Based Practical)
Course Outcomes:
CO1: Operations of matrices using practical applications
CO2: Problems solving for simultaneous equations
CO3: Estimation of parameters using sampling techniques

19ISTP75 – Statistics Practical – VI (Computer Based Practical)
Course Outcomes:
CO1: Familiarize in SPSS and SIGMAPLOT to
CO2: Calculate the various statistical measures
CO3: Test the significance of the parameters
CO4: Apply ANOVA test for appropriate data
CO5: Analyze the data using various multivariate analyses
CO6: Draw diagrams and graphs

19 SOSE 715.1 Elective –I Soft Skills
Course Outcomes:
CO1: Develop skills of personality development.
CO2: Understand the effective listening.
CO3: Communicate interpersonal relationships.
CO4: Shine in public speaking.
CO5: Develop writing skills.

19ISTC 81 - Distribution Theory
Course Outcomes:
CO1: Study the various discrete and continuous distributions
CO2: Study the various truncated distributions
CO3: Understand the biavariate distributions
CO4: Study the distributions of order statistics

CO5: Understand the distributions of quadratic forms

19ISTC82 - Estimation Theory
Course Outcomes:
CO1: Study the various criteria of estimators
CO2: Understand the concepts of sufficiency and completeness
CO3: Derive different inequalities
CO4: Understand the various methods of estimation and interval estimation
CO5: Study the Bayes estimation

19ISTC83 - Statistical Quality Control And Reliability
Course Outcomes:
CO1: To draw and obtaining results of various control charts.
CO2: To study the Cusum, V-mask and moving average control charts.
CO3: Understanding the concepts of acceptance sampling plans and their functions.
CO4: Apply the various sampling inspections in real life situations.
CO5: Understand the various concepts of reliability and their applications.

19ISTP84 : Statistics Practical – VII (Calculator Based Practical)
Course Outcomes:
CO1: Calculate problems relating to estimation methods.
CO2: Consturction of various charts in SQC
CO3: Solving problems in operation research by LPP, Game theory and network.
CO4: Solve problems of stochastic processes

19ISTP85 : Statistics Practical – VIII (Computer Based Practical)
Course Outcomes:
CO1: Familiarize in SYSTAT, STATGRAPH and DBMS to
CO2: Calculate the various statistical measures
CO3: Test the significance of the parameters
CO4: Apply ANOVA test for appropriate data
CO5: Analyze the data using various multivariate analyses
CO6: Draw diagrams and graphs

19 MATE 815.2 Elective-II - Numerical Methods
Course Outcomes:
CO1: Understand the problems of numerical algebraic equations.
CO2: Solve problems in linear algebraic equations.
CO3: Understand the various methods of interpolation.
CO4: Understand the various methods of numerical differenciation and integration.
CO5: Solve problems of ordinary differential equations

19ISTC91 - Testing Of Statistical Hypotheses
Course Outcomes:
CO1: Understand the various concepts of testing of hypotheses.
CO2: Study the use of NP lemma and locally most powerful tests.
CO3: Study the various likelyhood ratio tests.
CO4: Apply the various non-parametric methods in practical problems.
CO5: Understand the sequential methods of hypotheses testing

19ISTC92 - Multivariate Statistical Analysis

Course Outcomes:
CO1: Understand the use of multivariate normal tests.
CO2: Apply the multivariate tests using T2 statistics.
CO3: Understand the problems of classification of observations.
CO4: Apply the multivariate analyses such as principal components, canonical correlations in real life problems.
CO5: Apply the multivariate analyses such as factorial analysis and cluster analysis in real life problems.

19ISTC93 : Operations Research
Course Outcomes:
CO1: Understand the general LPP
CO2: Apply the integer programming problem.
CO3: Solve game problems in real life study.
CO4: Apply CPM/PERT techniques practically.
CO5: Apply the inventory system in economic problems.

19ISTC94 - Programming In R
Course Outcomes:
CO1: Understand the various basic concepts of R
CO2: Study the various functions and rules of R.
CO3: Understand the data cleaning and transformation.
CO4: Solve problems in statistical methods using R.
CO5: Obtaining inferences for statistical analysis using R.

19ISTP95 - Practical – IX (Calculator Based Practical)
Course Outcomes:
CO1: Solve problems in testing of hypotheses.
CO2: Solve problems in non-parametric tests

19ISTP96 – Statistics Practical – X (Computer Based Practical)
Course Outcomes:
CO1: Able to develop programs using R for descriptive statistics.
CO2: Calculate various statistical measures using R
CO3: Analyse and interpret using sample data in R
CO4: Apply various statistical test and interpret using R.

19 MATE 915.1 Elective-IV Differential Equations
Course Outcomes:
CO1: The skill of the formation of differential equations and partial differential equations,
CO2: The skill to expose different techniques of finding solution of differential equations and partial differential equations.

19ISTC101 - Design And Analysis Of Experiments
Course Outcomes:
CO1: Understand the various basic concepts of experimental designs.
CO2: Analyse the basic designs and interpretation.
CO3: Apply the various comparison tests and missing observations for experimental data.
CO4: Apply the factorial designs in field experiments.
CO5: Understand the incomplete block designs

19ISTC102 - Stochastic Processes

Course Outcomes:

CO1: Understand the basic concepts and classifications of stochastic processes.
CO2: Study the theorems of stationary probability distributions.
CO3: Analyse the birth and death processes and their applications.
CO4: Study the branching processes and their related concepts.
CO5: Apply and analyse the various queueing systems in real life situations.

19ISTP103 - Practical – XI (Calculator Based Practical)

Course Outcomes:

CO1: Carryout the analyses for various experimental designs and interpretation.
CO2: Apply the multivariate statistical tests.

19ISTP104 - Practical – XII (Computer Based Practical)

Course Outcomes:

CO1: Prepare programs for various statistical measures .
CO2: Prepare programs for various statistical tests.
CO3: Prepare programs for various matrix problems

19STAE806-1 Programming With C++

Course Outcomes:

CO1: Understand the fundamental concepts of C++ programming
CO2: Understand the various statements of C++
CO3: Study the arrays and pointers in C++
CO4: Familiarize in structures, classes and objects of C ++
CO5: Write programs using C++

19 STSE 815.1– Statistical Methods

Course Outcomes:

CO1: Understand the various diagrams and graphs for statistical data.
CO2: Calculate the various statistical methods.
CO3: Calculate the measures for bivariate data.
CO4: Undertstand the use of tests of significance.
CO5: Understand the use of chi square and anova tests

19 STSE 815.2- Mathematical Statistics

Course Outcomes:

CO1: Understanding concepts random variables and probability distributions.
CO2: Study the expectation and related results.
CO3: Apply the use of various functions.
CO4: Understand the various descriptive distributions.
CO5: Understand the various continuous distributions

19 STSE 915.1– Bio Statistics

Course Outcomes:

CO1: Understand the various diagrams and graphs for statistical data.
CO2: Calculate the various statistical methods.
CO3: Calculate the measures for bivariate data.
CO4: Undertstand the use of tests of significance.
CO5: Understand the use of chi square and anova tests.

Value Added Course For Inter Disciplinary Students

VAC - Statistical Methods For Data Analysis

Course Outcomes:

CO1: Understand the various concepts of statistical tests and to apply large sample tests.
CO2: Apply the exact tests for research problems.
CO3: Apply the various chi-square tests .
CO4: Apply the multiple regression analysis and multivariate tests for real life problems.
CO5: Apply the non-parametric tests for sample data.

DEPARTMENT OF STATISTICS

M.Sc. Statistics (Two Year) Programme

19STAC101 – Linear Algebra And Matrix Theory

Course Outcomes:

CO1: Solve problems in matrices and quadratic forms
CO2: Understand the concepts of vector space
CO3: Understanding various matrix transformations
CO4: Solving problems in linear equations
CO5: Obtain the eigen values and eigen vectors

19STAC102 : Measure And Probability Theory

Course Outcomes:

CO1: Understand the various types of measures
CO2: Study the theorems relating to measures
CO3: Apply the use of zero one laws
CO4: Application of theorems on random variables
CO5: Utilize the law of large numbers in research studies

19STAC103 : Sampling Theory

Course Outcomes:

CO1: Study the various criteria of estimators
CO2: Understand the concepts of sufficiency and completeness
CO3: Derive different inequalities
CO4: Understand the various methods of estimation and interval estimation
CO5: Study the Bayes estimation

19STAP104 – Statistics Practical – I (Calculator Based Practical)

Course Outcomes:

CO1: Operations of matrices using practical applications
CO2: Problems solving for simultaneous equations
CO3: Estimation of parameters using sampling techniques

19STAP105 – Statistics Practical – II (Calculator Based Practical)

Course Outcomes:

CO1: familiarize in SPSS and SIGMAPLOT to
CO2: Calculate the various statistical measures
CO3: Test the significance of the parameters
CO4: Apply ANOVA test for appropriate data
CO5: Analyze the data using various multivariate analyses

CO6: Draw diagrams and graphs

19 SOSE 115.1 Elective – I IDE 1 Soft Skills
Course Outcomes:
CO1: Develop skills of personality development.
CO2: Understand the effective listening.
CO3: Communicate interpersonal relationships.
CO4: Shine in public speaking.
CO5: Develop writing skills.

19STAC201 : Distribution Theory
Course Outcomes:
CO1: Study the various discrete and continuous distributions
CO2: Study the various truncated distributions
CO3: Understand the biavariate distributions
CO4: Study the distributions of order statistics
CO5: Understand the distributions of quadratic forms

19STAC202: Estimation Theory
Course Outcomes:
CO1: Study the various criteria of estimators
CO2: Understand the concepts of sufficiency and completeness
CO3: Derive different inequalities
CO4: Understand the various methods of estimation and interval estimation
CO5: Study the Bayes estimation

19STAC203 : Statistical Quality Control And Reliability
Course Outcomes:
CO1: To draw and obtaining results of various control charts.
CO2: To study the Cusum, V-mask and moving average control charts.
CO3: Understanding the concepts of acceptance sampling plans and their functions.
CO4: Apply the various sampling inspections in real life situations.
CO5: Understand the various concepts of reliability and their applications.

19STAP204 : Statistics Practical – III (Calculator Based Practical)
Course Outcomes:
CO1: Calculate problems relating to estimation methods.
CO2: Consturction of various charts in SQC
CO3: Solving problems in operation research by LPP, Game theory and network.
CO4: Solve problems of stochastic processes

19STAP205 : Statistics Practical – IV (Computer Based Practical)
Course Outcomes:
CO1: familiarize in SYSTAT, STATGRAPH and DBMS to
CO2: Calculate the various statistical measures
CO3: Test the significance of the parameters
CO4: Apply ANOVA test for appropriate data
CO5: Analyze the data using various multivariate analyses
CO6: Draw diagrams and graphs

19MATE215.2 - Elective– II-IDE-2 Numerical Methods

Course Outcomes:
CO1: Understand the problems of numerical algebraic equations.
CO2: Solve problems in linear algebraic equations.
CO3: Understand the various methods of interpolation.
CO4: Understand the various methods of numerical differenciation and integration.
CO5: Solve problems of ordinary differential equations.

19STAC301 : Testing Of Statistical Hypotheses
Course Outcomes:
CO1: Understand the various concepts of testing of hypotheses.
CO2: Study the use of NP lemma and locally most powerful tests.
CO3: Study the various likelyhood ratio tests.
CO4: Apply the various non-parametric methods in practical problems.
CO5: Understand the sequential methods of hypotheses testing.

19STAC302 : Multivariate Statistical Analysis
Course Outcomes:
CO1: Understand the use of multivariate normal tests.
CO2: Apply the multivariate tests using T2 statistics.
CO3: Understand the problems of classification of observations.
CO4: Apply the multivariate analyses such as principal components, canonical correlations in real life problems.
CO5: Apply the multivariate analyses such as factorial analysis and cluster analysis in real life problems.

19STAC303 : Operations Research
Course Outcomes:
CO1: Understand the general LPP
CO2: Apply the integer programming problem.
CO3: Solve game problems in real life study.
CO4: Apply CPM/PERT techniques practically.
CO5: Apply the inventory system in economic problems.

19STAC304: Programming In R
Course Outcomes:
CO1: Understand the various basic concepts of R
CO2: Study the various functions and rules of R.
CO3: Understand the data cleaning and transformation.
CO4: Solve problems in statistical methods using R.
CO5: Obtaining inferences for statistical analysis using R.

19STAP305 : Practical – V (Calculator Based Practical)
Course Outcomes:
CO1: Solve problems in testing of hypotheses.
CO2: Solve problems in non-parametric tests.

19STAP306 – Statistics Practical – VI (Computer Based Practical)
Course Outcomes:
CO1: Able to develop programs using R for descriptive statistics.
CO2: Calculate various statistical measures using R
CO3: Analyse and interpret using sample data in R

CO4: Apply various statistical test and interpret using R.

19MATE315.1 - Elective-IV-IDE-3 Differential Equations

Course Outcomes:

CO1: The skill of the formation of differential equations and partial differential equations.
CO2: The skill to expose different techniques of finding solution of differential equations and partial differential equations.

19STAC401 : Design And Analysis Of Experiments

Course Outcomes:

CO1: Understand the various basic concepts of experimental designs.
CO2: Analyse the basic designs and interpretation.
CO3: Apply the various comparison tests and missing observations for experimental data.
CO4: Apply the factorial designs in field experiments.
CO5: Understand the incomplete block designs.

19STAC402 : Stochastic Processes

Course Outcomes:

CO1: Understand the basic concepts and classifications of stochastic processes.
CO2: Study the theorems of stationary probability distributions.
CO3: Analyse the birth and death processes and their applications.
CO4: Study the branching processes and their related concepts.
CO5: Apply and analyse the various queueing systems in real life situations.

19STAP403 - Practical – VII (Calculator Based Practical)

Course Outcomes:

CO1: Carryout the analyses for various experimental designs and interpretation.
CO2: Apply the multivariate statistical tests

19STAP404 : Practical – VIII (Computer Based Practical)

Course Outcomes:

CO1: Prepare programs for various statistical measures .
CO2: Prepare programs for various statistical tests.
CO3: Prepare programs for various matrix problems

19STAE206-1 Programming With C++

Course Outcomes:

CO1: Understand the fundamental concepts of C++ programming
CO2: Understand the various statements of C++
CO3: Study the arrays and pointers in C++
CO4: Familiarize in structures, classes and objects of C ++
CO5: Write programs using C++

19STSE215.1 – Statistical Methods

Course Outcomes:

CO1: Understand the various diagrams and graphs for statistical data.
CO2: Calculate the various statistical methods.
CO3: Calculate the measures for bivariate data.
CO4: Undertstand the use of tests of significance.
CO5: Understand the use of chi square and anova tests.

19STSE215.2 - Mathematical Statistics

Course Outcomes:
CO1: Understanding concepts random variables and probability distributions.
CO2: Study the expectation and related results.
CO3: Apply the use of various functions.
CO4: Understand the various descriptive distributions.
CO5: Understand the various continuous distributions

19STSE315.1 – Bio Statistics
Course Outcomes:
CO1: Understand the various diagrams and graphs for statistical data.
CO2: Calculate the various statistical methods.
CO3: Calculate the measures for bivariate data.
CO4: Undertstand the use of tests of significance.
CO5: Understand the use of chi square and anova tests.

VAC - Statistical Methods For Data Analysis
Course Outcomes:
CO1: Understand the various concepts of statistical tests and to apply large sample tests.
CO2: Apply the exact tests for research problems.
CO3: Apply the various chi-square tests.
CO4: Apply the multiple regression analysis and multivariate tests for real life problems.
CO5: Apply the non-parametric tests for sample data.