Program Specific Outcomes for the Department of Statistics, Gurucharan College, Silchar

The courses in the department of Statistics, Gurucharan College, affiliated to Assam University are so designed so as to acquaint the students with the various aspects of data collection, analysis and compilation related to different fields of research activity. The theoretical and practical aspects of the course are designed to induce in the students the concept of statistical thinking and thereby prepare them for better planning and execution of various research activities that will lead to the development of the nation in general, and the soiety in particular. The program specific outcomes may be broadly classified under the heads: a) PSO for students pursuing Statistics as core subject and b) PSO for students pursuing BSc. in Statistics.

a) PSO for students taking Honours in Statistics or taking Statistics as core

1. Students are enriched with technical skills used in the subject of Statistics to analyse complex statistical data pertaining to various industrial, financial, agricultural fields etc.

2. They learn to develop various statistical models pertaining to theoretical postulates and also real life problems.

3. They develop the skill to design experiments relating to research in agriculture.

4. They develop the basic understanding of statistical testing and its application in various real life situations.

5. Students develop skill in designing and analysing various multivariate problems in theoretical and real life arena.

6. Students can utilise their statistical expertise in Medical research, engineering fields etc. and can participate in medical survey, research analytics etc.

7. They can actively participate in the process of data collection and analysis in population surveys conducted by government and other agencies.

8.The knowledge they acquire in statistical softwares like R, SPSS and C programming empower them to deal with very large data sets pertaining to real world problems and interpret the findings so as to make them comprehensible even to the layman.

9. Use of operation research theory will help them to find optimal solutions to various transportation problems, optimize the cost of running various industries etc.

10. The knowledge that they acquire through the theory of quality control techniques will enable them to design and control quality of manufactured products and thereby enhance the optimization of the quality of manufactured goods and services.

b) PSO for students taking pursuing BSc. in Statistics .

1. Students are enriched with technical skills used in the subject of Statistics to analyse complex statistical data pertaining to various industrial, financial, agricultural fields etc.

2. They learn to develop various statistical models pertaining to theoretical postulates and also real life problems.

3. They develop the skill to design experiments relating to research in agriculture.

4. They develop the basic understanding of statistical testing and its application in various real life situations. 6. Students can utilise their statistical expertise in Medical research, engineering fields etc. and can participate in medical survey, research analytics etc.

5. They can actively participate in the process of data collection and analysis in population surveys conducted by government and other agencies.

6. The knowledge they acquire in statistical softwares like R, SPSS and C programming empower them to deal with very large data sets pertaining to real world problems and interpret the findings so as to make them comprehensible even to the layman.

7. Use of operation research theory will help them to find optimal solutions to various transportation problems, optimize the cost of running various industries etc.

8. The knowledge that they acquire through the theory of quality control techniques will enable them to design and control quality of manufactured products and thereby enhance the optimization of the quality of manufactured goods and services.

9. Students can utilise their statistical expertise in Medical research, engineering fields etc. and can participate in medical survey, research analytics etc.

Course Outcomes (CO)

Department of Statistics,

G.C.College, Silchar-4

The Department follows the syllabus and curriculum structure offered by affiliating Assam University.

There are 20 theory papers and 18 practical papesr in B.Sc Statistics Honours programme, in 6 semesters. The Semester wise distribution of the Papers and their Course Outcomes(CO) are as follows:-

Semester	NAME OF THE PAPER	COURSE OUTCOMES
I	**Descriptive Statistics(STSHCC-101T)**	The emphasis of the paper is on descriptive statistics. It gives an idea about the CO1: Various statistical methods CO2: Measures of central tendency CO3:Correlation and Regression CO4: Theory of probability.
	Calculus(STSHCC-102T)	The emphasis of paper is on the theory based on CO1:Differential calculus, CO2: Integral calculus CO3:Differential equations CO4: Formation of solution of a partial differential equation.
	Descriptive Statistics(STSHCC-103L)	This paper is based on practical of descriptive statistics
II	**Probability and Probability Distributions (STSHCC-201T)**	This paper provides a general overview on probability distributions. CO1:Discrete distributions CO2: and continuous distributions
	Algebra(STSHCC-202T)	This paper emphasizes on CO1:Theory of equations CO2:Algebra of matrices CO3: Determinants of matrices, rank, characteristic roots and vectors.
	Probability and Probability Distributions (STSHCC -203L)	This paper is based on theory on CO1: Practical of probability CO2: Probability distributions
	Algebra(STSHCC-204L)	This paper is based on practical of CO1:Theory of equations CO2: Determinants of matrices, rank, characteristic roots and vectors.

III	**Sampling Distributions - (STSHCC-301T)**	This paper emphasizes on CO1:Limit laws CO2:Testing of hypothesis CO3: Sampling distributions.
	Survey Sampling and Indian Official Statistics - (STSHCC-302T)	This paper introduces the various CO1: Sampling Techniques (viz., Simple Random Sampling, Stratified Random Sampling etc.) CO2:Concept on official statistics
	Mathematical Analysis - (STSHCC-302T)	The emphasis of this paper is on CO1: Real analysis CO2:Numerical analysis and CO3: Numerical integration
	Sampling Distributions - (STSHCC-304L)	This paper is a practical paper on CO1:Testing of significance CO2: Confidence intervals.
	Survey Sampling and Indian Official Statistics - (STSHCC-305L)	This paper is on practical based on CO1: Simple random Sampling CO2:Stratified Random Sampling
III	**Mathematical Analysis - (STSHCC-306L)**	This paper is a practical based paper on CO1:Interpolation formulae CO2: Numerical integration.
III	**Statistical Data Analysis Using R STSSECC-301T**	This paper reviews and expands upon CO1: Core topics in statistics and probability, particularly by initiating the beneficiaries of the course to R for statistical computing.
IV	**Statistical Inference - (STSHCC-401T)**	The emphasis of is on CO1:Methods of estimation CO2:Test of significance.
	Linear Models (STSHCC-402T)	This paper is based on CO1:Methods of least squares CO2:Regression analysis CO3: Analysis of variance and model checking.
	Statistical Quality Control and Index Number - (STSHCC-403T)	The emphasis of this paper is on CO1: Control charts CO2:Sampling plan and index numbers
	Statistical Techniques for Research Methods	The paper aims at enabling students understand CO1: basic concepts and aspects related to research,

IV	**(STSSEC-401T)**	data collection, analyses and interpretation.
	Statistical Inference - (STSHCC-404L)	This paper is a practical paper on CO1:Methods of estimation CO2:Power curves
	Linear Models (STSHCC-405L)	This paper is a practical paper on CO1:Simple and multiple regression CO2:Tests for linear hypothesis CO3: Analysis of a one way and two way classified data.
	Statistical Quality Control and Index Number - (STSHCC-406L)	This paper is a practical paper on CO1:Statistical control charts CO2: Calculation of index numbers.
V	**Stochastic Processes and Queuing Theory - (STSHCC-501T)**	This paper emphasizes on CO1:Generating functions CO2:Sstochastic process
	Statistical Computing Using C/C++ Programming - (STSHCC-502T)	This paper emphasizes on CO1:Theory and concept of C programming language
	Time Series Analysis - (STSDSE-501T)	This paper emphasis on CO1:Ttime series analysis
	Demography and Vital Statistics - STSDSE-502T)	This paper is based on practical on vital statistics. CO1: To calculate CDR, ASDR CO2: To calculate CBR, GFR, SFR, TFR for a given set of data
	Stochastic Processes and Queuing Theory - (STSHCC-503L)	This paper is a practical paper on CO1:Stochastic process
	Statistical Computing Using C/C++ Programming - (STSHCC-504L)	This paper is a practical paper on CO1: C programming language.
	Time Series Analysis - (STSDSE-503L)	This paper is based on practical of CO1:Time series analysis.
	Demography and Vital Statistics - (STSDSE-504L)	This paper is based on practical on vital statistics.
VI	**Design of Experiments- (STSHCC-601T)**	This paper emphasis on design of experiments. CO1: Analysis of CRD,RBD,LSD CO2: Analysis of Missing plot techniques in RBD, LSD CO3:BIBD, Factorial Experiments and Fractional factorial
	Multivariate Analysis and	This paper emphasizes on

	Nonparametric Methods - (STSHCC-602T)	CO1: Bi-variate and multivariate normal distributions CO2:Ssequential analysis CO3: Nonparametric tests.
	Econometrics - (STSDSE(A)-601T)	The emphasis of this paper is on concept of econometrics: CO1: Introduction: Objective behind building econometric models, nature of econometrics CO2: Introduction and concepts, detection of multicollinearity, consequences, tests and solutions of multicollinearity. CO3: Autocorrelation: concept, consequences of autocorrelated disturbances, detection of autocorrelation. CO4: Heteroscedasticity and Consequences of heteroscedasticity.
	Operations Research - (STSDSE(B)-602T)	This paper is based on CO1:Introduction to Operations Research, CO2:Transportation Problem CO3: Game theory and inventory management.
	Design of Experiments- (STSHCC-603L)	This paper is based on practical of design of experiments CO1: Analysis of CRD,RBD,LSD CO2: Analysis of Missing plot techniques in RBD, LSD CO3:Analysis of Factorial Experiments
	Multivariate Analysis and Nonparametric Methods - (STSHCC-604L)	This paper is based on the practical on CO1: Bi-variate and multivariate normal distributions CO2:Ssequential analysis CO3: Nonparametric tests.
	Econometrics - (STSDSE(A)-603L)	This paper is based on practical of econometrics. CO1: Problems related to consequences of Multicollinearity CO2: Problems related to consequences of Autocorrelation (AR(I)) CO3: Problems related to consequences Heteroscedasticity
	Operations Research - (STSDSE(B)-604L)	This paper is based on practical of CO1: Operations Research CO2: Transportation Problem CO3: Game theory and inventory management.

There are 10 theory papers and 4 practical papers in B.Sc with Statistics programme, in 6 semesters. The Semester wise distribution of the Papers and their Course Outcomes (CO) are as follows:-

Semester	NAME OF THE PAPER	COURSE OUTCOMES
I	**Descriptive Statistics and Probability Theory (STSDSC/STSGEC-101T)**	The emphasis of the paper is on descriptive statistics and probability theory. It gives an idea about the CO1: Various statistical methods CO2: Measures of central tendency CO3:Correlation and Regression CO4: Theory of probability.
	Descriptive Statistics and Probability Theory (STSDSC/STSGEC-102L	This paper is based on CO1: Practical of descriptive statistics.
II	**Statistical Methods (STSDSC/STSGEC-201T)**	The paper emphasizes on CO1: random variables, moments, and cumulant generating functions CO2:Bivariate probability distributions CO3: Llimit theorems.
	Statistical Methods (STSDSC/STSGEC202L	This paper is based on practical of probability distributions*:* CO1:Fitting of Binomial distribution CO2: Fitting of Poisson distribution CO3: Fitting of Normal distribution
III	**Statistical Inference (STSDSC/STSGEC-301T)**	The emphasis of this paper is on CO1:Sampling distributions CO2:Large sample tests CO3:Method of estimation
	Statistical Inference (STSDSC/STSGEC302L	This paper is based on practical of CO1: Large sample tests CO2:Testing goodness of fit CO3: Method of estimation.
	Statistical Computing using C (STSSEC-301T)	This paper reviews and expands upon CO1:Core topics in statistics and probability, particularly by initiating the beneficiaries of the course to C programming for statistical computing.
IV	**Sample Surveys and Design of Experiments**	The emphasis of course is based on the CO1: Concept of sample survey CO2: Design of experiments.

	(STSDSC/STSGEC-401T)	
	Sample Surveys and Design of Experiments (STSDSC/STSGEC-402L)	This paper is based on practical of CO1: Survey sampling CO2: Design of experiments.
	Statistical Data Analysis using R (STSSEC-401T)	This paper reviews and expands upon CO1: Core topics in statistics and probability, particularly by initiating the beneficiaries of the course to R for statistical computing.
V	**Vital Statistics (STSDSE-501T)**	This paper emphasis on CO1:Population theories CO2:Source of data collection on vital statistics CO3: Measurements of Fertility.
	Vital Statistics (STSDSE-502L)	This paper is based on practical on vital statistics. CO1: To calculate CDR, ASDR CO2: To calculate CBR, GFR, SFR, TFR for a given set of data CO3: To find Standardized death rate by:- (i) Direct method (ii) Indirect method
	Statistical Techniques for Research Methods (STSSEC-501T)	Statistical Techniques provide scientific approaches to develop the domain of human knowledge largely through empirical studies. This paper aims at CO1: Enabling students to understand basic concepts and aspects related to research, data collection, analyses and interpretation.
VI	Index Number and Time Series Analysis **(STSDSE-601T)**	This paper emphasizes on CO1: Definition and construction of index numbers. CO2: Introduces the concept of time series analysis.
	Index Number and Time Series Analysis **(STSDSE-601T)**	This paper is based on practical on CO1:Index numbers CO2: Ttime series.
	Data Analysis using Software(SPSS or Microsoft Excel) **(STSSEC-601T)**	This paper reviews topics in probability and statistics for data analysis. CO1: Introduction to SPSS/Excel for statistical computing, analysis and graphical interpretation are done using software skills.