Criteria 2.6.1: POs and COs

Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website and attainment of POs and COs are evaluated.

Metric type: Qualitative
Weightage: 25

POs and PSOs are designed to guarantee thorough understanding of the programme and courses because these are essential components for students' future professional success. POs are framed by keeping in mind the expected holistic learning and developing of post completion of the graduation and post-graduation programme in a particular subject. Contrarily, COs are designed by identifying which courses, portions of courses, or series of courses fulfil each PO.The COs are recognized within the discipline's context and supported through teaching and learning activities.

While preparing the POs and COs, the departments can refer to the Gauhati university syllabus for assistance, but a thorough discussion with the department faculty members is encouraged to draft an effective POs and COs particular to our college's vision and mission. While there will be only one department specific POs each for UG & PG programme, the COs will have to be prepared for every paper taught in each semester at the graduate and post-graduate programmes.

Department of 'STATISTICS'

Programme Specific Outcome (BA/B.Sc. in 'Statistics')

The programme specific outcome of the syllabus prescribed for the major students of 'subject/department' is mentioned below:

- Provide the information in bullets
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- This course in statistics helps the students to develop, design and analyse experiments in empirical research.
- It helps in optimization and computational techniques for the solution of the real-life problems.
- Analyse complex statistical data coming from the various fields like industry, marketing, finance, agriculture and business.
- This program offers a range of traditional avenues in academics, Govt. Service,IAS,Indian Statistical/ Economic Services, Industries, Commerce,Investment Banking, Banks and Insurance Sectors, CSO and NSSO,Research Personnel/Investigator in Govt. organizations such as NCAER, IAMR, ICMR, Statistical and Economic Bureau & various PSUs., Market Research,Actuarial Sciences, Biostatistics, Demography etc.
- Along with this students are equipped with skill enhancement courses like Research methodology, SPSS and R language etc.

COURSE OUTCOME

B.Sc&B.A in 'Statistics' (Honours) syllabus (CBCS)

1st Semester (Honours)

Paper Name: (Descriptive Statistics)
Paper Code: HC-1016

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course, the students will be able to: • Learn design data collection plans and basic tools of descriptive statistics. • Have the critical thinking in the theory of probability and its applications in real life problems. • Get a concept of Regression and correlation. • Have the prior knowledge of Index Numbers and its applications in business related field.	Unit I: Statistical Methods	Remember, Understand
	Unit II:Measures of Central Tendency.	Remember, Understand, Analyse
	Unit III:Bivariate data.	Remember, Understand
	Unit IV IndexNumbers.	Remember, Understand

Paper Name: Calculus
Paper Code: HC-1026

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course, the students will be able to Understand mathematical calculus, Integral calculus, Differential equations and partial Differential equations through visualizations .	Unit I: Differential Calculus.	Remember, Understand, Apply, Analyze
	Unit II:Integral Calculus.	Remember, Understand, Analyse
	Unit III:Differential Equations.	Remember, Understand, Analyse
	Unit IV: Partial Differential Equations.	Remember, Understand, Apply, Analyse

2nd Semester (Honours)

Paper Name: Probability and Probability Distributions
Code: HC-2016

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course, the students will be able to : • Acquire knowledge on random variables, types of r.v and properties of r.v. • Know about the distribution functions and properties of distribution function. • Know about the expectations and generating function like	Unit I: Probability.	Remember, Understand, Apply, Analyze
	Unit II:Random variables.	Remember, Understand
	Unit III:Mathematical Expectation and Generating Functions.	Remember, Understand, Analyse

mgf, cumulant generating function, characteristic functions. • Have Knowledge on Binomial, Poisson and Normal distributions and its various properties.		
	Unit IV: Mathematical Expectation and Generating Functions.	Remember, Understand, Apply, Analyse

Paper Name: Algebra

Code: HC-2026

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course: • the students will be able to gain knowledge on different types of equation like quadratic, cubic etc. • Acquire a prior knowledge on matrix, different types of matrices, adjoint and inverse of a matrix, solution of set of linear equations through matrices, rank of a matrix, characteristic roots and characteristic vectors and their properties, quadratic forms.	Unit I: Theory of equations.	Remember, Understand, Apply, Analyze
	Unit II: Algebra of matrices.	Remember, Understand
	Unit III:Determinants of Matrices.	Remember, Understand, Apply, Evaluate
	Unit IV: Matrices.	Remember, Understand, Apply, Analyse

3rd Semester (Honours)

Paper Name: Sampling Distribution
Code: HC-3016

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Understand the concept of sampling distribution, t distribution, F distribution, chin – square distribution and their properties and applications in real life. • .Acquire knowledge on Population, Sample, Parameter, Statistics, Large and small sample, Types of hypothesis and types of errors etc.	Unit I: Order Statistics. .	Remember, Understand
	Unit II:Sampling Distributions. .	Remember, Understand,Apply
	Unit III: Exact Sampling Distribution.	Remember, Understand, Apply, Evaluate
	Unit IV: Sampling Distribution.	Remember, Understand, Apply, Analyse, Evaluate

Paper Name: Survey Sampling and Indian Official Statistics.
Code: HC-3026

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Understand Census, Sampling, Execution of sample surveys and error. • Design a questionnaire. • Know the function of CSo, NSSO, MoSPI etc. • Use of simple random sampling with and without replacement, stratified random sampling, systematic sampling, cluster sampling etc	Unit I: Survey Sampling.	Remember, Understand
	Unit II:Stratified Random Sampling.	Remember, Understand,
	Unit III: Ratio and Regression Method of Sampling. .	Remember, Analyse
	Unit IV: Official Statistics. .	Remember

Paper Name: Mathematical Analysis
Code: HC-3036

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Know about different types of sets, series and sequence, real numbers, Principle of Convergence. • Design a questionnaire. • Know the function of CSo, NSSO, MoSPI etc. • Use of simple random sampling with and without replacement, stratified random sampling, systematic sampling, cluster sampling etc	Unit I: Real Analysis.	Remember, Understand, Apply, Analyse
	Unit II:Infinite Series.	Remember, Understand, Apply, Analyse,
	Unit III: Limits, Continuity and Differentiability.	Remember, Understand, Apply, Analyse, Evaluate
	Unit IV: Numerical Analysis.	Remember, Understand, Apply

4thSemester (Honours)

Paper Name:Statistical Data Analysis Using Software Packages
Paper Code: SE - 3014

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Acquire knowledge on entering data by using R programming, performing various graphical representation of collected data and analysis of data by using various R packages..	Unit I: Graphical Representation.	Remember, Understand, Apply, Analyse
	Unit II:Report Generation.	Remember, Understand, Apply, Analyse,
	Unit III: Fitting Curves.	Remember, Understand, Apply, Analyse, Evaluate

	Unit IV: Analysis	Remember, Understand, Apply

4th Sem (Honours)

Paper Name: Statistical Inference
Code: STA-HC 4016

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Understand Estimation, various methods of Estimation, Test of Significance and SPRT.	Unit I: Estimation	Remember, Understand, Apply, Analyse
	Unit II Methods of Estimation.	Remember, Understand, Apply, Analyse,
	Unit III:Principles of test of significance	Remember, Understand, Apply, Analyse, Evaluate
	Unit IV: Principles of test of significance	Remember, Understand, Apply

Paper Name: Linear Models
Paper Code: HC- 4026

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Understand Analysis of Variance in one way and two way classified data and prediction of fitted data. • Gain knowledge on linear model, Gauss Markov model and regression analysis.	Unit I: Gauss-Markov Set-up.	Remember, Understand, Apply, Analyse
	Unit II Regression Analysis.	Remember, Understand, Apply, Analyse,
	Unit III: Analysis of Variance.	Remember, Understand, Apply, Analyse, Evaluate
	Unit IV: Model Checking.	Remember, Understand, Apply

Paper Name: Statistical Quality Control
Paper Code: HC - 4036

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level

After the completion of this course the students will be able to: • Understand Principle of acceptance sampling plans and six Sigma method. Single and Double sampling plan their OC, AQL, LTPD, AOQ, AOQL, ASN, ATI functions with graphical interpretation. • Understand Statistical Quality Control, Different types of control Charts like X-bar ,R-chart, np-chart and their uses	Unit I: Statistical Process Control	Remember, Understand, Apply, Analyse
	Unit II Control Charts for Variables.	Remember, Understand, Apply, Analyse,
	Unit III: Acceptance Sampling Plan.	Remember, Understand, Apply, Analyse, Evaluate
	Unit IV Six-Sigma-up.	Remember, Understand, Apply

5th Semester(Honours)

Paper Name: Stochastic Processes and Queuing Theory
Code: STA-HC 5016

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Get an idea about bivariate distributios, stochastic process amd stationary process. • Understand Markov Chain, transition probability, stochastic matrix. Have knowledge on queuing theory	Unit I: Probability Distributions.	Remember, Understand, Apply, Analyse
	Unit II: Markov Chains.	Remember, Understand, Apply, Analyse,
	Unit III:Poisson Process.	Remember, Understand, Apply, Analyse, Evaluate
	Unit IV:Queuing System.	Remember, Understand, Apply

Paper Name: Statistical Computing Using C/C++ Programming
Code: STA-HC 5026

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Have basic knowledge of different operators in C programming, loops and Arrays used in C programming.	Unit I: C Programming.	Understand, Apply, Analyse, Create
	Unit II: Decision making and Arrays.	Understand, Apply, Analyse, Create

Paper Name: Operations Research
Code: STA-HE-5016

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Acquire some basic knowledge of Operation Research and its applications. • Apply various optimization techniques in the field of manufacturing, transportation, job assignment and inventory management.	Unit I: Operations Research	Remember, Understand, Apply, Analyse
	Unit II:Transportation Problem	Remember, Understand, Apply, Analyse,
	Unit III:Game Theory	Remember, Understand, Apply, Analyse, Evaluate
	Unit IV: Inventory Management	Remember, Understand, Apply

Paper Name: Time Series Analysis
Code: STA-HE-5026

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Know the meaning and application of Time series • Have knowledge on various forecasting method..	Unit I: Introduction to Time Series	Remember, Understand, Apply, Analyse
	Unit II: Introduction to Time Series	Remember, Understand, Apply, Analyse,
	Unit III:Moving average	Remember, Understand, Apply, Analyse, Evaluate
	Unit IV: Forecasting and Smoothing to Time Series	Remember, Understand, Apply

6th Semester (Honours)

Paper Name: Design of Experiments
Code: STA-HC- 6016

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Understand various experimental designs like CRD, RBD, LSD, Split Plot design and BIBD and their applications in analysis of data. • Understand factorial Experiments and their application in various fields	Unit I: Design of Experiments.	Remember, Understand, Apply, Analyse
	Unit II: Design of Experiments.	Remember, Understand, Apply, Analyse,
	Unit III: Factorial Experiments.	Remember, Understand, Apply, Analyse, Evaluate

Paper Name: Multivariate Analysis and Non Parametric Methods
Code: STA-HC- 6026

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to:	Unit I: Bivariate and Multivariate	Remember, Understand, Apply, Analyse

• Understand different types of non parametric tests and their applications. • Understand bivariate and multivariate normal distributions along with their properties and applications	Distributions.	
	Unit II: Multivariate Normal Distributions.	Remember, Understand, Apply, Analyse,
	Unit III: Non-parametric Tests.	Remember, Understand, Apply, Analyse, Evaluate

Paper Name: Demography and Vital Statistics
Code: STA-HE- 6026

Course Outcome	Unit/ Topic	Bloom's Taxonomy Level
After the completion of this course the students will be able to: • Understand different types of non parametric tests and their applications. • Understand bivariate and multivariate normal distributions along with their properties and applications	Unit I: Population Theory	Remember, Understand, Apply, Analyse
	Unit II: Measurement of Mortality	Remember, Understand, Apply, Analyse,
	Unit III:Life Table Unit IV: Measurement of Fertility	Remember, Understand, Apply, Analyse, Evaluate

Paper Name: Project Work
STA-HE-6046