DEPARTMENT OF STATISTICS
B. Sc. Statistics

Program Outcomes

PO1: Students learn to apply theory learned so far up to 12th standard since Statistics is applied subject.

PO2: Students Employability increases due to various techniques covered in the papers like "Design of Experiment", "Regression Analysis", "Reliability and Survival analysis" which are the main features used in Business Analytics

PO3: Due to the Subjects like "C Programming" and "Statistical Computing using R Software" students get exposure to computer knowledge and their use and hence their logical thinking is developed.

PO4: Students get knowledge of basic concepts required for higher studies.

PO5: Students starts thinking more scientifically and analytically.

Program Specific Outcomes

PSO1: Students learn different techniques used in Industries and research used for carrying the analysis.

PSO2: Students will be well acquainted with various fields in statistical knowledge is useful.

PSO3: Students learn the team work while completing the project work.

PSO4: Students get knowledge and training of technical subjects and get more employability in upcoming industries.

Course Outcomes
F. Y. B. Sc. Statistics (2019 pattern)

ST 111: Descriptive Statistics-I

CO1: Students will understand the concept of population and sample. They will understand how to collect data using various statistical sampling methods and how to classify and represent that data graphically.

CO 2: Students will go through various statistical measures such as measures of central tendency, dispersion, skewness and kurtosis.

CO3: Students will able to describe the comparison between interrelated data sets and also able to find appropriate conclusions using the suitable measures of centrality, dispersion and skewness – kurtosis.

CO4: They will understand mathematical operations done with attributes.

CO5: Students will understand the applications of attributes in the real life.

CO6: The students are expected start using some statistical software and verify their theoretical knowledge about different statistical entities and computations during practical sessions.

ST-112 Discrete Probability

CO1: Students will get familiar with basic concepts of probability, random variable and probability distributions.

CO2: Students will be able to understand the difference between random and non-random experiments.

CO3: Students will be able to solve the numerical problems on probability.

CO4: Students will be able to obtain the probability distributions of random variables.

CO5: Students will be able to apply the standard discrete probability distributions to different real-life situations.

ST-121 Descriptive Statistics-II

CO1: Students will understand the concept of bivariate data. They will understand how to collect bivariate data using various statistical sampling methods and how to classify and represent that data graphically.

CO2: Students will go through statistical measures such as Karl Pearson's correlation coefficient to estimate relationship among variables.

CO3: Students will able to describe the correlation between interrelated variables and also able to find appropriate regression equation among the variables.

CO4: They will understand how to construct mathematical equations to display the relationship among variables using line fitting and curve fitting methods.

CO5: Students will understand the applications of index numbers in the real life.

CO6: The students are expected start using some statistical software and verify their theoretical knowledge about different statistical entities and computations during practical sessions.

ST 122: Discrete Probability Distributions

CO1: Students will get familiar with basic concepts of Standard Probability Distributions.

CO2: Students will be able to apply the standard discrete probability distributions like Poisson and Geometric to different real life situations

CO3: Students will get familiar with Bivariate Discrete Probability Distribution.

CO4: Students will be able to solve the numerical problems on Bivariate Discrete Probability Distribution.

CO5: Students will get familiar with Raw and Central Moments and Mathematical Expectation.

ST-113 and 123 Statistics Practical Paper

CO1: Numerical ability will be developed.

CO2: Problem solving skills will be developed

CO3: All the formulae developed in the theory will be practiced and will be remembered by the students.

CO4: Students will get familiar with computer (MS Excel), and they can use it more efficiently.

S. Y. B. Sc. Statistics (2019 Pattern)

ST-231 Discrete Probability Distributions, Time Series

CO1: Students will be able to identify the real-life situations of discrete probability distributions.

CO2: They will be able to find probabilities related to standard probability distributions.

CO3: Students will be able to understand the concept of time series.

CO4: They will learn different methods of measurements of trend and seasonal variations.

ST-232 Continuous Probability Distributions

CO1: Students will understand the concept of continuous random variable and its probability distribution.

CO2: Students will go through various derivations done for mathematical expectation and variance, moment generating function and cumulant generating functions.

CO3: Students will able to describe and study the different kinds of continuous probability distributions such as Uniform distribution, Normal distribution, Gamma and Exponential distribution.

CO4: They can find relations among aforesaid continuous random variables.

CO5: Students can implement these probability distributions in handling the real life data.

ST-241 Testing of Significance and Statistical Methods

CO1: Students will be able to fit the best equation of plane of multiple regression.

CO2: They will be able to understand the concept of testing of hypothesis and they will carry out test for means and proportions.

CO3: Students will be able to carry out different tests of hypothesis using R software.

CO4: They will understand the concept of vital statistics and they can compute rates of different vital events.

CO5: Students will understand the concept of queuing models.

ST-242 Sampling Distributions and Exact Tests

CO1: Students will understand the concept of sampling distributions of functions of different continuous random variables.

CO2: Students will go through various derivations done for mathematical expectation and variance, moment generating function and cumulant generating functions.

CO3: Students will able to describe and study the different kinds of continuous probability distributions such as Chi Square distribution, t- distribution, F distribution.

CO4: They can find relations among aforesaid continuous random variables.

CO5: Students can implement these probability distributions in handling the real-life data in terms of testing different types of hypothesis.

ST-233 and 243 Statistics Practical Paper

CO1: Students will be familiar with model sampling and fitting of distribution

CO2: Students will learn to apply distributions they have learnt in real life situations.

 CO3: All the formulae developed in the theory will be practiced and will be remembered by the students.

CO4: Students will get familiar with computer with more advanced formulae/ techniques in (MS Excel), and they can use it more efficiently.

ST 351: Distribution Theory-I

CO1: Students will understand the concept of continuous random variable and its probability distribution.

CO2: Students will go through various statistical distributions and their respective mathematical expectation and variance, moment generating function and cumulant generating functions.

CO3: Students will able to describe and study the relations between various continuous probability distributions such as Beta distribution, Cauchy distribution. Students can implement these probability distributions in handling the real life data.

CO4: They can find applications of Central Limit Theorem and Chebychev's inequality theorem.

ST 352 Theory of Estimation

CO1: Students will describe various terms for point estimation, interval estimation to understand the problem of statistical inference.

CO2: Students will able to compute Cramer – Rao lower bound in order to find most efficient estimator.

CO3: Students will estimate the parameters with multiple criteria

  i)   Minimum variance
  ii)   Maximum likelihood

CO4: Students will able to analyze the estimation techniques and apply suitable estimation and detection techniques.

CO5: Students will be able to collect various situations to discuss about the importance of an estimator of unknown parameter.

ST 353 Design and Analysis of Experiments

CO1: Students will able to identify relationship between cause and effect, planning and designing the experiments.

CO2: Students will able to apply different experimental designs to real life situations.

CO3: Students will able to design a layout of different statistical design.

CO4: Students will validate the design employed in real life situations using residual analysis.

CO5: Students will analyzed collected information through the experiments using different designs using ANOVA technique.

ST 354 Statistical Process and Product Control

CO1: Students will able to design control charts and monitor the process behavior overtime.

CO2: Students will understand statistical process control and statistical concepts for process control and process capability.

CO3: Students will demonstrate knowledge of control charts.

CO4: Students will understand key techniques for capturing data in quality control.

CO5: Students will be able to understand relationship between SPC and six sigma.

ST 355 C Operations Research – I

CO1: Students will be able to think logically.

CO2: Students will learn data types and commands in C.

CO3: Students will be able learn different unconditional and conditional type of instructions in programming

CO4: Students will learn to write code in C to do statistical calculations and can solve different problems in Statistics.

 CO5: Students can write code in any other language since logical thinking is developed.

ST 356 Regression Analysis

CO1: Students will recall concept of fitting of simple regression models.

CO2: Students will compare residual diagnostic and apply corrective measures.

CO3: Students will analyze the multiple linear regression model and determine tests of hypotheses of model parameter.

CO4: Students will analyze the logistic linear regression model and determine tests of hypotheses of model parameter.

CO5: Students will be able to relate all regression models in real life situations.

ST 3510 TURBO C (Practical Course)

CO1: Students will understand fundamentals in C like algorithms, flowcharts, data types etc.

CO2: Students will learn control structures like if else, for.., do…while loops.

CO3: Students understand the concepts of arrays (numerical and non-numerical arrays)

CO4: Students can practice like functions.

CO5: Students learn different types of programs by developing the logic for it.

ST 3511 Statistical computing using R software (Practical Course)

CO1: Students will understand peculiar characteristics of R like diagrammatic and graphical representation of data.

CO2: Students learn calculations of different statistical measures like central tendency, dispersion. Skewness, kurtosis.

CO3: Students also learn probability distributions their graphical representation, model sampling, fitting.

CO4: Students learn different tests of hypothesis, non –parametric test, ANOVA

CO5: Students learn different types of programs by developing the logic for it.

ST 361: Distribution Theory- II

CO1: Students will understand the concept of continuous random variable and its probability distribution.

CO2: Students will go through various statistical distributions and their respective mathematical expectation and variance, moment generating function and cumulant generating functions.

CO3: Students will able to describe and study the relations between various continuous probability distributions such as Weibull distribution, Laplace distribution, lognormal distribution, truncated normal distribution and bivariate distribution. Students can implement these probability distributions in handling the real life data.

ST 362 Testing of Hypotheses

CO1: Students will understand the difference between type I and type II errors and their importance

CO 2: Students will learn hypothesis testing in general and the decision rules for different situations.

CO 3: Students will able to conduct and interpret tests for different population parameters and for different distributions.

CO 4: Students will be able to handle the situation of testing for non- normal data.

CO 5: Students will learn conduct the test sequentially.

ST 363 Sampling Theory

CO1: Students will understand different how to prepare questionnaire.

CO 2: Students will understand different ways of selecting a sample.

CO 3: Students will be able to compare efficiency of different sampling methods.

CO 4: Students will be understand Ratio and Regression estimators.

CO 5: Students will learn sampling errors and to their importance.

ST 364 Introduction to survival Analysis

CO1: Survival Analysis primarily refers to the study of time-to-event data.

Students will understand this concept and they will learn how to visualize and communicate time-to-event data.

CO2: Students will able to study the several terms and definitions used in the ageing of any component or system of components. They will be able to prove various properties abouts "no ageing" type.

CO3: They will classify the different probability distributions as positive and negative ageing type distributions.

CO4: Students should differentiate among censored and uncensored data. The estimation of survival function based on non-parametric and actuarial methods will be used for different datasets.

ST 365 (A) Actuarial Statistics

CO1: Students will be able to explain the role of Statistics in Insurance business.

CO 2: Students will be able to describe and apply the fundamental theories of Actuarial Science as they are applying in life insurance, general insurance.

CO3: Students will be able to explain the concept of Utility function and feasibility of Insurance business.

CO4: Students will be able to use Actuarial Statistics techniques and its application in assessing probability models and data and able to construct life table using random survivorship approach.

CO5: Students will be able to explain the concept of Annuity.

CO6: Students will learn various life insurance products and they can calculate benefit premiums for respective products.

ST 366(B) Reliability theory and Applications

CO1: Reliability primarily refers to the study of time-to-event data.Students will understand this concept and they will learn how to visualize and communicate time-to-event data.

CO 2: Students will go through various types of coherent systems and can compute reliability of the same based on their reliability block diagrams.

CO 3: Students will able to describe the system and component redundancy and can study system reliability using cut sets and path sets.

ST-367,368, and 369 Statistics Practical Paper

CO1: Students will be able to apply the techniques of "ANOVA" they have learnt.

CO2: Students will be able draw control charts and their interpretation.

CO3: Students will be able to write C programs and R programs and hence the interpretation.

ST 3610 Introduction to Python (Practical Course)

CO1: Students will understand fundamentals in Input and output statements in Python.

CO2: Students will learn control structures like if else, for.., do…while loops.

CO3: Students will learn organizing python codes using functions, importing own modules as well as external modules.

CO4: Students can learn file operations.

CO5: Students will learn manipulation of data.

ST 3611 Data Analytics (Practical Course)

CO1: Students will get introduced to data mining.

CO2: Students will learn different classification techniques.

CO3: Students will learn techniques of evaluation and checking the accuracy.

CO4: Students can get introduced to artificial neural network and Market basket analysis..

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