
DEPARTMENT OF STATISTICS

Program Educational Objectives (PEO):

B. Sc. Statistics program has semester pattern and credit system with variable credits. The learning objectives of this program are:

PEO1: Students should be able to understand fundamentals of statistical techniques and implement.

PEO2: To develop statistical view for better understanding and analytic ability.

PEO3: The ability to bring together and flexibly apply it to characterize, analyze and solve a wide range of problems with statistical models.

PEO4: The ability to communicate effectively in terms of technical and non-technical audiences.

Program Outcomes (PO):

On successful completion of the program students will be able to:

PO1: Have fundamental knowledge and understanding of statistical theory at an applied level in the subject.

PO2: Acquire the strong foundation of statistical concepts which will benefit them to become good academicians.

PO3: Use acquired statistical tools and techniques to address various real-life problems.

PO4: Gain the knowledge of software which has the wide range of opportunities in the various sectors viz., IT sector Quality control in industries, Business, Government and private sector etc.

PO5: Qualify various National / State level competitive exams viz. ISS, DSO, GATE, MPSC, UPSC, Banking etc.

Program Specific Outcomes (PSO):

On successful completion of the program students will be able to:

PSO1: Understand and implement statistical models.

PSO2: Handle and analyze databases with computer skills.

PSO3: Describe complex statistical ideas to non-statisticians and can make practical suggestions for improvement.

PSO4: Get wide range of statistical skills in problem-solving.

Course Outcomes (for all courses):

The course outcomes are the statement that describes the knowledge & abilities developed in the student by the end of course (subject) teaching. The focus is on development of abilities rather than mere content. There are 4 course outcomes of all courses defined here. These are to be written in the specific terms and not in general.

DEPARTMENT OF STATISTICS

B.Sc. First Year

Paper-I Descriptive Statistics and Computing

Course objectives:

Students should be able to learn :

1. To organize, Manage and present data.
2. To arrange data in tabular form and to represent it graphically.
3. To understand the concept of measures of central tendency, Dispersion, Skewness and Kurtosis.
4. To understand the characteristics of data using method of Moments and their use in real life.
5. To understand the functioning of Indian Statistical Organization.

Course outcomes:

Students will/ may be able to :

1. Organize, Manage and present data.
2. Arrange data in tabular form and to represent it graphically.
3. Understand the concept of measures of central tendency, Dispersion, Skewness and Kurtosis.
4. Understand the characteristics of data using method of Moments and their use in real life.
5. Knowledge of functioning of Indian Statistical Organization.

Paper-II Elementary Probability Theory

Course objectives:

Students should be able to learn:

1. To understand basic foundation of theory of probability.
2. To solve probability theory associated real life problems.
3. To understand random variables and their types.
4. To calculate marginal, conditional and joint probabilities.
5. To study the Moment generating function, cumulant generating function and expectation function of data.

Course outcomes:

Students will/ may be able to :

1. understand basic foundation of theory of probability.
2. Solve probability theory associated real life problems.
3. Fundamentals of random variables and their types.
4. Calculate marginal, conditional and joint probabilities.
5. To study the Moment generating function, cumulant generating function and expectation function of data.

Paper-III Theory of Variables and Attributes

Course objectives:

Students should able to learn:

1. Foundation of correlation , various correlation coefficients- Pearson's correlation coefficient, Spearman's rank correlation coefficients.
2. To calculate correlation between two variables.
3. To calculate the simple linear regression equation for a set of data.
4. To understand the association between the attributes.
5. To understand and fit the curve to the given data.

Course outcomes:

Students will/ may able to :

1. Learn fundamentals of correlation , various correlation coefficients- Pearson's correlation coefficient, Spearman's rank correlation coefficients.
2. Learn to compute correlation between two variables.
3. Learn to fit simple linear regression equation for a set of data.
4. Learn find association between the attributes.
5. Learn to fit the curve to the given data.

Paper-IV Discrete Probability Distributions

Course objectives:

Students should able to learn:

1. To understand fundamentals of discrete probability distributions.
2. To Identify the characteristics of different discrete distribution.
3. To Identify the situation where different distributions can be applied.
4. To understand the relationship between discrete distributions to solve statistical problems.
5. To use different discrete probability distribution to solve problems using MS-EXCEL.

Course outcomes:

Students will/ may able to :

1. Understand fundamentals of discrete probability distributions.
2. Learn the characteristics of different discrete distribution.
3. Find situations where different distributions can be applied.
4. Perform the relationship between discrete distributions to solve statistical problems.
5. Implement MS-EXCEL to solve different discrete probability distributions.

Paper-VI Continuous Probability Distributions

Course objectives:

Students should able to learn:

1. To understand fundamentals of continuous probability distributions.
2. To Identify the characteristics of different continuous distribution.
3. To Identify the situation where different continuous distributions can be applied.
4. To understand the relationship between continuous distributions to solve statistical problems.
5. To use different continuous probability distribution to solve problems using MS-EXCEL.

Course outcomes:

Students will/ may able to :

1. Understand fundamentals of continuous probability distributions.
2. Learn the characteristics of different continuous distribution.
3. Find situations where different continuous distributions can be applied.
4. Perform the relationship between continuous distributions to solve statistical problems.
5. Implement MS-EXCEL to solve different continuous probability distributions.

Paper VII Applied Statistics

Course objectives:

Students should able to learn :

1. To understand the fundamental s of multiple and partial correlations.
2. To understand time series components for model building.
3. To understand various methods for application of measuring trends of data.
4. To understand the fundamentals of index number.
5. To understand the fundamentals of consumer index number.

Course outcomes:

Students will/ may able to :

1. Understand fundamental s of multiple and partial correlations.
2. Understand time series components for model building.
3. Understand various methods for application of measuring trends of data.
4. Understand the fundamentals of index number.
5. Understand the fundamentals of consumer index number.

Paper VIII Exact Sampling Distribution

Course objectives:

Students should be able to learn :

1. To understand the fundamentals of sampling distributions.
2. To understand Chi-square distribution and its applications.
3. To understand t-distribution and its applications.
4. To understand F-distribution and its applications.
5. To understand Z-distribution, transformation and its applications.

Course outcomes:

Students will/ may be able to :

1. Understand the fundamentals of sampling distributions.
2. Understand Chi-square distribution and its implementation on various data sets.
3. Understand t-distribution and its implementation on various data sets.
4. Understand F-distribution and its applications.
5. Understand Z-distribution, transformation and its applications.

Paper IX Statistical Inference and Computing using R

Course objectives:

Students should be able to learn :

1. To understand the fundamentals of point estimation.
2. To understand fundamentals of testing of hypothesis.
3. To understand test of significance and types of errors.
4. To understand Non-parametric tests and applications.
5. To understand fundamentals of R software and its handling.

Course outcomes:

Students will/ may be able to :

1. Understand the fundamentals of point estimation.
2. Understand fundamentals of testing of hypothesis.
3. Understand test of significance and types of errors.
4. Understand Non-parametric tests and applications.
5. Learn to use R software and its handling.

Paper XII Survey Sampling

Course objectives:

Students should be able to learn :

1. To understand the fundamentals of sampling techniques.
2. To understand fundamentals of simple random samplings .
3. To understand fundamentals of stratified random samplings .
4. To understand fundamentals of systematic random samplings .
5. To understand fundamentals of sampling attributes.

Course outcomes:

Students will/ may be able to :

1. Understand the fundamentals of various sampling techniques.
2. Learn fundamentals of simple random samplings and its use .
3. Understand fundamentals of stratified random samplings and its applications.
4. Understand fundamentals of systematic random samplings and its applications.
5. Learn fundamentals of sampling attributes.

Paper XIII Linear Programming

Course objectives:

Students should be able to learn :

- 1 To understand the fundamentals of operations research.
- 2 To understand fundamentals of convex set, convex combination and related theorems .
- 3 To understand fundamentals of general LPP .
- 4 To understand fundamentals of graphical and simplex method .
- 5 To understand transportation and assignment problem.

Course outcomes:

Students will/ may be able to :

1. Learn fundamentals of operations research.
2. Learn fundamentals of convex set, convex combination and related theorems .
3. Learn fundamentals of general LPP and its formulation.
4. Learn fundamentals of graphical and simplex method and its implementation .
5. Understand basics of formulation of transportation and assignment problem and its applications.

Paper XIV Design of Experiment

Course objectives:

Students should be able to learn :

1. To understand the fundamentals of design of experiment.
2. To understand fundamentals of Completely randomized design .
3. To understand fundamentals of randomized block design .
4. To understand fundamentals of Latin square design .
5. To understand factorial experimental design.

Course outcomes:

Students will/ may be able to :

1. Learn fundamentals of design of experiment.
2. Learn fundamentals of Completely randomized design and its applications.
3. Learn fundamentals of randomized block design and its applications.
4. Learn fundamentals of Latin square design and applications.
5. Learn basics of factorial experimental design and its applications

Paper XV Operations Research

Course objectives:

Students should be able to learn :

1. To understand the fundamentals of sequencing problem.
2. To understand fundamentals of traveling salesman problem
3. To understand fundamentals of queuing theory .
4. To understand fundamentals of game theory .
5. To understand PERT and CPM.

Course outcomes:

Students will/ may be able to :

1. Learn fundamentals of sequencing problem and its applications.
2. Learn fundamental and application of traveling salesman problem.
3. Learn fundamental theory of queue and its modeling .
4. Learn fundamentals and applications of game theory .
5. Learn construction of PERT and CPM in various situations.