Department of Statistics

Course Outcomes

COURSE TITLE: Descriptive Statistics & Probability

After completing the course students are expected to be able to:

S. No.	Course Outcomes	Blooms Taxonomy Classification
CO1	Recall basic statistical terminology, such as mean, median, mode, variance, and standard deviation. Memorize fundamental probability concepts, including sample space, events, and probability rules.	Remembering
CO2	Understand the meaning and interpretation of measures of dispersion in describing the variability of data. Understand the fundamental principles of probability theory, including sample spaces, events, and probability laws.	Understanding
CO3	Apply different measures of central tendency and dispersion to summarize and interpret real-world data sets. Apply the concept of moments to calculate the mean, variance, skewness, and kurtosis of probability distributions.	Applying
CO4	Analyze data variability using measures of dispersion and interpret the results in the context of the data set. Analyze the properties and characteristics of probability distributions.	Analyzing
CO5	Design and conduct experiments or surveys to collect data for statistical analysis. Create frequency distributions, histograms, and other graphical representations to visualize data distributions.	Creating

COURSE TITLE: Probability Distributions

After completing the course students are expected to be able to:

S. No.	Course Outcomes	Blooms Taxonomy Classification
CO1	Remember the formulas for calculating probabilities, mean, variance, and other parameters for each distribution.	Remembering
CO2	Understand the concept and application of binomial distribution in modeling the number of successes in a fixed number of independent trials. Understand the exponential distribution and its application in modeling the time between events in a Poisson process.	Understanding
CO3	Apply the binomial distribution to solve problems involving the probability of a certain number of successes in a series of independent trials. Apply the properties of the normal distribution to solve problems related to probability density, percentiles, and standardization.	Applying
CO4	Analyze data and determine which probability distribution is appropriate based on the characteristics of the data and the underlying process.	Analyzing
CO5	Develop models using probability distributions to simulate real-world phenomena and processes. Create probability distribution functions and cumulative distribution functions for different distributions.	Creating

COURSE TITLE: Statistics Methods and Estimation

After completing the course students are expected to be able to:

S. No.	Course Outcomes	Blooms Taxonomy Classification
CO1	Apply correlation analysis to assess the relationship between variables in real-world data sets. Apply regression analysis to develop predictive models and make forecasts based on historical data.	Remembering
CO2	Understand the concept of correlation and its use in measuring the strength and direction of the relationship between two variables. Understand the rationale behind different estimation methods such as maximum likelihood estimation and method of moments.	Understanding
CO3	Apply correlation analysis to assess the relationship between variables in real-world data sets. Apply regression analysis to develop predictive models and make forecasts based on historical data.	Applying
CO4	Analyze the results of correlation analysis to draw conclusions about the strength and direction of relationships between variables.	Analyzing
CO5	Design correlation studies to investigate relationships between variables of interest. Develop regression models to predict outcomes and analyze the impact of predictor variables.	Creating

COURSE TITLE: Statistical Inference

After completing the course students are expected to be able to:

S. No.	Course Outcomes	Blooms Taxonomy Classification
CO1	Recall the concepts and principles of statistical inference. Remember the definitions and assumptions of small and large sample tests.	Remembering
CO2	Understand the purpose and importance of statistical inference in drawing conclusions from sample data to population parameters.	Understanding
CO3	Apply small sample tests, such as t-tests, to compare means and assess differences between sample groups.	Applying
CO4	Analyze the results of small and large sample tests to draw conclusions about population parameters.	Analyzing
CO5	Design hypothesis tests to address research questions and test hypotheses about population parameters.	Creating

COURSE TITLE: Applied Statistics-I

After completing the course students are expected to be able to:

S. No.	Course Outcomes	Blooms Taxonomy Classification
CO1	Recall the concepts and methods used in sample surveys, including sampling techniques and survey design.	Remembering
CO2	Understand the importance of sample surveys in collecting and analyzing data to make inferences about populations. Understand the interpretation of results obtained from sample surveys, time series analysis, and statistical quality control.	Understanding
CO3	Apply sampling techniques to design and conduct sample surveys to gather data for analysis.	Applying
CO4	Analyze sample survey data to estimate population parameters and assess the reliability of survey results. Analyze the effectiveness of sampling methods, time series models, and quality control procedures in different contexts.	Analyzing
CO5	Design sample survey protocols and sampling plans to address specific research questions and objectives. Develop time series models to forecast future trends and patterns based on historical data.	Creating

COURSE TITLE: Analytical Statistics-I

After completing the course students are expected to be able to:

S. No.	Course Outcomes	Blooms Taxonomy Classification
CO1	Recall the fundamental principles and methods used in sample surveys, time series analysis, statistical quality control, analysis of variance (ANOVA), and design of experiments (DOE). Remember the terminology, formulas, and procedures associated with each statistical technique.	Remembering
CO2	Understand the purpose and importance of sample surveys in collecting and analyzing data to make inferences about populations.	Understanding
CO3	Apply sampling techniques to design and conduct sample surveys and analyze survey data. Apply time series analysis techniques to analyze temporal data and forecast future trends and patterns.	Applying
CO4	Analyze sample survey data to estimate population parameters and assess the reliability of survey results. Analyze time series data to identify trends, seasonal patterns, and other temporal phenomena.	Analyzing
CO5	Design sample survey protocols and sampling plans to address specific research questions and objectives. Design ANOVA experiments to compare means across multiple groups and identify factors influencing the outcome.	Creating

COURSE TITLE: Applied Statistics-II

After completing the course students are expected to be able to:

S. No.	Course Outcomes	Blooms Taxonomy Classification
CO1	Recall the principles and methods of analysis of variance (ANOVA) and design of experiments (DOE). Remember the formulas and techniques used to compute index numbers for economic and financial analysis.	Remembering
CO2	Understand the purpose and significance of ANOVA in comparing means across multiple groups and treatments. Understand the interpretation and limitations of various statistical measures used in vital statistics and index numbers.	Understanding
CO3	Apply ANOVA techniques to analyze variance and test hypotheses about mean differences across multiple groups or treatments.	Applying
CO4	Analyze variance components and test assumptions in ANOVA models to draw valid conclusions about group differences. Analyze experimental data to assess treatment effects, identify interactions, and optimize experimental conditions.	Analyzing
CO5	Develop protocols for collecting and analyzing vital statistics data to monitor and assess population health.	Creating

COURSE TITLE: Analytical Statistics-II

After completing the course students are expected to be able to:

S. No.	Course Outcomes	Blooms Taxonomy Classification
CO1	Recall the definitions and properties of multivariate distributions, including joint and marginal distributions.	Remembering
CO2	Understand the concept of multivariate distributions and their applications in modeling joint distributions of multiple variables.	Understanding
CO3	Apply multivariate distributions to model and analyze joint distributions of multiple variables. Apply multivariate data analysis techniques such as principal component analysis and factor analysis to extract meaningful patterns and relationships from multivariate data sets.	Applying
CO4	Analyze multivariate distributions to understand the relationships and dependencies among multiple variables. Analyze multivariate data sets using statistical techniques to identify patterns, clusters, and associations among variables.	Analyzing
CO5	Design multivariate data analysis frameworks to explore and analyze complex relationships among multiple variables. Develop protocols for collecting and analyzing vital statistics data to monitor and assess population health and demographic trends.	Creating