FATIMA COLLEGE (AUTONOMOUS), MADURAI – 625018

NAME OF THE PROGRAMME: B.SC. STATISTICS **PROGRAMME CODE: USST**

PROGRAMME OUTCOMES:

The learners will be able to

PO1: Apply acquired scientific knowledge to solve complex issues.

PO2: Attain Analytical skills to solve complex cultural, societal and environmental issues.

PO3: Employ latest and updated tools and technologies to analyse complex issues.

PO4: Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.

PROGRAMME SPECIFIC OUTCOMES:

PSO1: Apply the knowledge of Statistics, Mathematics and Computer science to become competent professionals at global level

PSO2: Apply statistical knowledge to analyze and solve complex problems using appropriate statistical methodology and interpret results in a variety of settings

PSO3: Demonstrate the ability of critical observation, logical, analytical and problem-solving skills

PSO4: Write code to extract and reformat real data and to utilize statistical programming environments

PSO5: Effectively present statistical findings to an audience lacking statistical expertise and work collaboratively

PSO6: Excel as socially committed statistics students having mutual respect, effective communication skills, high ethical values and empathy for the needs of society

2019 – 2020

COURSE CODE	COURSE TITLE	COURSE OUTCOMES
19ST1CC1	Descriptive Statistics I	CO1: Recognizes investigation, investigator, enumerator and enumeration and explain different methods of data collection. CO2: Identifies the need of Classification and Tabulation CO3: Construct and analyze graphical display to summarize data. CO4: Explain and evaluates various measure of central tendency CO5: Compute and interpret measure of center and spread of data.

19ST1CC2	Probability Theory	CO1: Identify from a probability scenario events that are simple, complementary, mutually exclusive, and independent. CO2: Recognize multiplication rule for two independent events, the addition rule for union of two events, and the complement rule. CO3: Describe the main properties of probability distribution and random variables. CO4: Construct discrete and continuous random variables CO5: Apply general properties of the expectation and variance operators
19ST1AC1	Calculus	CO1: Explain higher derivatives and apply Leibnitz theorem to find the nth derivative of functions. CO2: Explain multiple points, Envelopes, nodes and conjugate points CO3: Construct reduction formula for trigonometric functions. CO4: Define Jacobian, double & triple integrals and apply the knowledge of change of variables to solve the problems in double and triple integrals.

		CO5: Construct Fourier series by recalling integration.
19ST2CC3	Descriptive Statistics II	CO1: Evaluates and interprets the nature of skewness and kurtosis CO2: Identify the direction and strength of a correlation between two factors. CO3: Compute and interpret the spearman correlation coefficient. CO4: Calculate and interpret the coefficient of determination CO5: Recognize regression analysis applications for purpose of description and prediction.
19ST2CC4	Distribution Theory 1	CO1: Recognize cases where the Binomial distribution could be an appropriate model. CO2: Able to apply the Poisson distribution to a variety of problems. CO3: Explore the key properties such as the moment generating function, cumulate of a negative binomial distribution. CO4: Understand and derive the formula for the geometric and hyper

		geometric probability mass function.
19ST2AC2	Algebra	CO1: Define binomial series, logarithmic and exponential series and solve problems. CO2: Identify relations between the roots and co-efficient of equations. CO3: Explain the transformations of equations. CO4: Recognize the important methods in finding roots of the given polynomial. CO4: Solve algebraic equations using Newton's method and Horner's method.
COURSE CODE	**COURSE TITLE**	**COURSE OBJECTIVE**
ST3CC5	Distribution Theory II	• To enable the students understand the continuous probability distribution and real life situations where these distributions provide appropriate models.

ST3CC6	Sampling Theory	• To enable the students understand the concept of statistical sampling and to make them conduct sample survey independently by selecting the suitable sampling techniques.
ST3AC3	Linear Programming	• This course enable the students convert real life problems into a Mathematical problem and to solve them using different techniques like graphical method, simplex method, Big – M method, Two - phase method and dual simplex method.
ST3SB1	Practical Statistics I	• To expose the students the analysis of statistical techniques in real life situations.
ST4CC7	Statistical Inference I	• To enable the students understand the various statistical estimation methods of parameters and its applications in solving real life problems.
ST4CC8	Applied Statistics	• To enable the students understand and appreciate the applications of Statistics.

ST4AC4	Linear Algebra	• To enable the students to understand matrix and vector space concepts which can be applied in Graph Theory, Linear Programming, Physics and Chemistry etc.,
ST4SB2	Practical Statistics II	• To expose the students analyze the statistical techniques in real life situations.
ST5CC9	Statistical Inference II	• To enable the students have a better understanding on testing of hypothesis in statistical data analysis.
ST5CC10	Design of Experiments	• To enable the students understand the fundamentals of experimental designs, analysis tools and techniques, interpretation and applications.
ST5CC11	Computer Programming in C	• To enable the students to learn the basic concepts of data input, output, operators, expressions, control statements, arrays, handling of strings and user – defined functions to write C programs.

ST5ME1	Real Analysis	• To enable the students understand the basic concepts of sequences and series, connectedness and compactness and proof techniques.
ST5ME2	Multivariate Analysis	• To derive statistical inference based on multivariate statistical analysis.
ST5SB3	Practical Statistics III	• To expose the students to the analysis of statistical techniques in real life situations.
ST5SB4	Statistical Software - SPSS	• To expose the students on the applications of statistical analysis using SPSS
ST6CC12	Statistical Quality Control	• To introduce the students the basics of Statistical Quality Control and to enable them describe quality characteristics and relationships.
ST6CC13	Stochastic Processes	• To expose the students to the basics of stochastic process and to clarify Markov chain, Poisson process and pure birth
ST6CC14	Operations Research	• To aim at familiarizing the students with quantitative tools and

		techniques, which are frequently applied to business decision making and to provide a formal quantitative approach to problem solving.
ST6ME3	Numerical Methods	• To enable the students to solve Algebraic, Transcendental, Differential Equations using various Numerical methods like Bisection, Runge-Kutta, Euler and Taylor.
ST6ME4	Regression Analysis	• To expose the students to regression models applicable to real life situation.
ST6ME5	Actuarial Statistics	• The Actuarial statistics curriculum aims at providing the academics and professional training to students who wish to join the actuarial profession.
ST6ME6	Industrial Statistics	• This course enables the students competent to undertake industrial researches.
ST6SB5	Practical Statistics IV	• To expose the students to the analysis of statistical techniques in real life situations.

ST6SB6	Statistical Software – R	• To expose the students on the applications of statistical analysis using statistical package.

2018 - 2019

COURSE CODE	COURSE TITLE	COURSE OBJECTIVE
ST1CC1	Descriptive Statistics I	• To enable the students to analyze the given data and make them solve simple real life problems related to descriptive measures in statistics.
ST1CC2	Probability Theory	• To enable the students understand the concepts of random variable and distribution functions, expectation, conditional expectation and variance, generating functions, law of large numbers.
ST1AC1	Calculus	• To enable the students to understand higher derivatives,

		curvature, singular points, envelopes, asymptotes, reduction formula, multiple integrals and Fourier series in calculus.
ST2CC3	Descriptive Statistics II	• This course imparts the knowledge of correlation, regression and association of attributes to students.
ST2CC4	Distribution Theory I	• This course exposes students the various important discrete probability models and real life situations where these distributions provide appropriate models.
ST2AC2	Algebra	• To enable the students to learn the fundamentals of Algebra and this includes topics like binomial, exponential and logarithmic series and theory of equations.
ST3CC5	Distribution Theory II	• To enable the students understand the continuous probability distribution and real life situations where these distributions provide appropriate models.
ST3CC6	Sampling Theory	• To enable the students understand the concept of statistical sampling and to make them conduct sample survey independently

		by selecting the suitable sampling techniques.
ST3AC3	Linear Programming	• This course enable the students convert real life problems into a Mathematical problem and to solve them using different techniques like graphical method, simplex method, Big – M method, Two - phase method and dual simplex method.
ST3SB1	Practical Statistics I	• To expose the students the analysis of statistical techniques in real life situations.
ST4CC7	Statistical Inference I	• To enable the students understand the various statistical estimation methods of parameters and its applications in solving real life problems.
ST4CC8	Applied Statistics	• To enable the students understand and appreciate the applications of Statistics.
ST4AC4	Linear Algebra	• To enable the students to understand matrix and vector space concepts which can be applied in Graph Theory, Linear Programming, Physics and Chemistry etc.,

ST4SB2	Practical Statistics II	• To expose the students analyze the statistical techniques in real life situations.
ST5CC9	Statistical Inference II	• To enable the students have a better understanding on testing of hypothesis in statistical data analysis.
ST5CC10	Design of Experiments	• To enable the students understand the fundamentals of experimental designs, analysis tools and techniques, interpretation and applications.
ST5CC11	Computer Programming in C	• To enable the students to learn the basic concepts of data input, output, operators, expressions, control statements, arrays, handling of strings and user – defined functions to write C programs.
ST5ME1	Real Analysis	• To enable the students understand the basic concepts of sequences and series, connectedness and compactness and proof techniques.

ST5ME2	Multivariate Analysis	• To derive statistical inference based on multivariate statistical analysis.
ST5SB3	Practical Statistics III	• To expose the students to the analysis of statistical techniques in real life situations.
ST5SB4	Statistical Software - SPSS	• To expose the students on the applications of statistical analysis using SPSS
ST6CC12	Statistical Quality Control	• To introduce the students the basics of Statistical Quality Control and to enable them describe quality characteristics and relationships.
ST6CC13	Stochastic Processes	• To expose the students to the basics of stochastic process and to clarify Markov chain, Poisson process and pure birth
ST6CC14	Operations Research	• To aim at familiarizing the students with quantitative tools and techniques, which are frequently applied to business decision making and to provide a formal quantitative approach to problem

		solving.
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ST6ME6	Industrial Statistics	• This course enables the students competent to undertake industrial researches.
ST6SB5	Practical Statistics IV	• To expose the students to the analysis of statistical techniques in real life situations.
ST6SB6	Statistical Software – R	• To expose the students on the applications of statistical analysis using statistical package.

2017 - 2018

COURSE CODE	COURSE TITLE	COURSE OBJECTIVE
ST1CC1	Descriptive Statistics I	• To enable the students to analyze the given data and make them solve simple real life problems related to descriptive measures in statistics.
ST1CC2	Probability Theory	• To enable the students understand the concepts of random variable and distribution functions, expectation, conditional expectation and variance, generating functions, law of large numbers.
ST1AC1	Calculus	• To enable the students to understand higher derivatives, curvature, singular points, envelopes, asymptotes, reduction formula, multiple integrals and Fourier series in calculus.
ST2CC3	Descriptive Statistics II	• This course imparts the knowledge of correlation, regression and association of attributes to students.

ST2CC4	Distribution Theory I	• This course exposes students the various important discrete probability models and real life situations where these distributions provide appropriate models.
ST2AC2	Algebra	• To enable the students to learn the fundamentals of Algebra and this includes topics like binomial, exponential and logarithmic series and theory of equations.
ST3CC5	Distribution Theory I	• This course exposes students the various important discrete probability models and real life situations where these distributions provide appropriate models.
ST3CC6	Sampling Theory	• To enable the students understand the concept of statistical sampling and to make them conduct sample survey independently by selecting the suitable sampling techniques.
ST3AC3	Algebra	• To enable the students to learn the fundamentals of Algebra and this includes topics like binomial, exponential and logarithmic series and theory of equations.

ST3SB1	Practical Statistics I	• To expose the students the analysis of statistical techniques in real life situations.
ST4CC7	Statistical Inference I	• To enable the students understand the various statistical estimation methods of parameters and its applications in solving real life problems.
ST4CC8	Distribution Theory II	• To enable the students understand the continuous probability distribution and real life situations where these distributions provide appropriate models.
ST4AC4	Linear Algebra	• To enable the students to understand matrix and vector space concepts which can be applied in Graph Theory, Linear Programming, Physics and Chemistry etc.,
ST4SB2	Practical Statistics II	• To expose the students analyze the statistical techniques in real life situations.

2016 – 2017

COURSE CODE	COURSE TITLE	COURSE OBJECTIVE
ST1CC1	Introduction to Statistics	• To enable the students to analyze the given data and make them solve simple real life problems related to descriptive measures in statistics.
ST1CC2	Statistical Methods	• This course imparts the knowledge of correlation, regression and association of attributes to students.
ST1AC1	Calculus	• To enable the students to understand higher derivatives, curvature, singular points, envelopes, asymptotes, reduction formula, multiple integrals and Fourier series in calculus.
ST2CC3	Applied Statistics	• To enable the students understand and appreciate the applications of Statistics
ST2CC4	Probability Theory	• To enable the students understand the concepts of random variable and distribution functions, expectation, conditional expectation and variance, generating functions, law of large

		numbers.
ST2AC2	Differential Equations	• To enable the students to get thorough knowledge of solving Differential Equations, this is essential for learning higher Mathematics.