**PROGRAMME CODE: USST** 



 Criterion : I – Curricular Aspects
 Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – B.Sc. STATISTICS
 Year : 2015 - 2020



#### FATIMA COLLEGE (AUTONOMOUS), MADURAI – 625018

#### NAME OF THE PROGRAMME: B.SC. STATISTICS

#### **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	NATURE O COURS (LOCA NATION REGION GLOBA	DF THE SE L/ IAL/ IAL/ AL)	COURSE DESCRIPTION	COURSE OUTCOMES
19ST1CC1	Descriptive Statistics 1	National		This course introduces the historical development of statistics, presentation of data, descriptive	<ul> <li>CO1: Recognizes investigation, investigator, enumerator and enumeration and explain different methods of data collection.</li> <li>CO2: Identifies the need of Classification and Tabulation</li> <li>CO3: Construct and analyze graphical display to</li> </ul>



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			measures and fitting mathematical curves to the data.	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	Global	This course introduces the concepts of functions and its properties, theorems related to random variables.	<ul> <li>CO1: Identify from a probability scenario events that are simple, complementary, mutually exclusive, and independent.</li> <li>CO2: Recognize multiplication rule for two independent events, the addition rule for union of two events, and the complement rule.</li> <li>CO3: Describe the main properties of probability distribution and random variables.</li> <li>CO4: Construct discrete and continuous random variables</li> </ul>



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CO5: Apply general properties of the expectation and variance operators Global 19ST1AC1 Calculus This course CO1: Explain higher derivatives and apply Leibnitz theorem to find the nth derivative of covers differentiation functions. and integration CO2: Explain multiple points, Envelopes, nodes of functions of and conjugate points one variable. 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.



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19ST2CC3	Descriptive	National	This course	CO1: Evaluates and interprets the nature of
	Statistics II		introduces	skewness and kurtosis
			measurement of relationship in terms of quantitative and qualitative data.	<ul> <li>CO2: Identify the direction and strength of a correlation between two factors.</li> <li>CO3: Compute and interpret the spearman correlation coefficient.</li> <li>CO4: Calculate and interpret the coefficient of the</li></ul>
		E así		CO5: Recognize regression analysis applications for purpose of description and prediction.
19ST2CC4	Distribution	National	This course	CO1: Recognize cases where the Binomial
	Theory 1		introduces	distribution could be an appropriate model.
			probability	CO2: Able to apply the Poisson distribution to a
			functions for	variety of problems.
			random variables that	CO3: Explore the key properties such as the



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			are defined for different probabilistic situations.	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	National	This course introduces the concept of classical algebra to the students of Statistics.	<ul> <li>CO1: Define binomial series, logarithmic and exponential series and solve problems.</li> <li>CO2: Identify relations between the roots and coefficient of equations.</li> <li>CO3: Explain the transformations of equations.</li> <li>CO4: Recognize the important methods in finding roots of the given polynomial.</li> <li>CO4: Solve algebraic equations using Newton's method and Horner's method.</li> </ul>



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Course Code	Course Title	NATURE OF THE COURSE (LOCAL/NATIONAL/ REGIONAL/GLOBAL)	COURSE OBJECTIVE
ST3CC5	Distribution Theory II	National	• To enable the students understand the continuous probability distribution and real life situations where these distributions provide appropriate models.
ST3CC6	Sampling Theory	Global	• 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	National	• 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.



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ST3SB1	Practical Statistics I	Global	• To expose the students the analysis of statistical techniques in real life situations.
ST4CC7	Statistical Inference I	Global	• To enable the students understand the various statistical estimation methods of parameters and its applications in solving real life problems.
ST4CC8	Applied Statistics	Global	• To enable the students understand and appreciate the applications of Statistics.
ST4AC4	Linear Algebra	National	• 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	Global	• To expose the students analyze the statistical techniques in real life situations.
ST5CC9	Statistical	Global	• To enable the students have a better understanding



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	Inference II		on testing of hypothesis in statistical data analysis.
ST5CC10	Design of Experiments	Global	• To enable the students understand the fundamentals of experimental designs, analysis tools and techniques, interpretation and applications.
ST5CC11	Computer Programming in C	Global	<ul> <li>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.</li> </ul>
ST5ME1	Real Analysis	Global	• To enable the students understand the basic concepts of sequences and series, connectedness and compactness and proof techniques.
ST5ME2	Multivariate Analysis	Global	• To derive statistical inference based on multivariate statistical analysis.
ST5SB3	Practical Statistics III	Global	• To expose the students to the analysis of statistical techniques in real life situations.



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ST5SB4	Statistical Software - SPSS	Global	• To expose the students on the applications of statistical analysis using SPSS
ST6CC12	Statistical Quality Control	National	• To introduce the students the basics of Statistical Quality Control and to enable them describe quality characteristics and relationships.
ST6CC13	Stochastic Processes	Global	• To expose the students to the basics of stochastic process and to clarify Markov chain, Poisson process and pure birth
ST6CC14	Operations Research	National	• 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	Global	• To enable the students to solve Algebraic, Transcendental, Differential Equations using various Numerical methods like Bisection, Runge-Kutta,



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			Euler and Taylor.	
ST6ME4	Regression	Global	• To expose the students to regression models	
	Analysis	LE	applicable to real life situation.	
ST6ME5	Actuarial	National	• The Actuarial statistics curriculum aims at providing	
	Statistics		the academics and professional training to students	
			who wish to join the actuarial profession.	
ST6ME6	Industrial	National	• This course enables the students competent to	
	Statistics		undertake industrial researches.	
ST6SB5	Practical	Global	• To expose the students to the analysis of statistical	
	Statistics IV		techniques in real life situations.	
ST6SB6	Statistical	Global	• To expose the students on the applications of	
	Software – R	ADD	statistical analysis using statistical package.	
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Course Code	Course Title	NATURE OF THE COURSE (LOCAL/NATIONAL/ REGIONAL/GLOBAL)	Course Objective
ST1CC1	Descriptive Statistics I	National	• 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	Global	• 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	Global	• To enable the students to understand higher derivatives, curvature, singular points, envelopes, asymptotes, reduction formula, multiple integrals and Fourier series in calculus.



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ST2CC3	Descriptive Statistics II	National	• This course imparts the knowledge of correlation, regression and association of attributes to students.
ST2CC4	Distribution Theory I	National	• This course exposes students the various important discrete probability models and real life situations where these distributions provide appropriate models.
ST2AC2	Algebra	National	• 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	National	• To enable the students understand the continuous probability distribution and real life situations where these distributions provide appropriate models.
ST3CC6	Sampling	Global	• To enable the students understand the concept of



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	Theory	NA C	statistical sampling and to make them conduct sample survey independently by selecting the suitable sampling techniques.
ST3AC3	Linear Programming	National	• 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	Global	• To expose the students the analysis of statistical techniques in real life situations.
ST4CC7	Statistical Inference I	Global	• To enable the students understand the various statistical estimation methods of parameters and its applications in solving real life problems.
ST4CC8	Applied Statistics	Global	• To enable the students understand and appreciate the applications of Statistics.



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ST4AC4	Linear Algebra	National	• 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	Global	• To expose the students analyze the statistical techniques in real life situations.
ST5CC9	Statistical Inference II	Global	• To enable the students have a better understanding on testing of hypothesis in statistical data analysis.
ST5CC10	Design of Experiments	Global	• To enable the students understand the fundamentals of experimental designs, analysis tools and techniques, interpretation and applications.
ST5CC11	Computer Programming in C	Global	• To enable the students to learn the basic concepts of data input, output, operators, expressions, control statements, arrays, handling of strings and



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			user – defined functions to write C programs.
ST5ME1	Real Analysis	Global	• To enable the students understand the basic concepts of sequences and series, connectedness and compactness and proof techniques.
ST5ME2	Multivariate Analysis	Global	• To derive statistical inference based on multivariate statistical analysis.
ST5SB3	Practical Statistics III	Global	• To expose the students to the analysis of statistical techniques in real life situations.
ST5SB4	Statistical Software - SPSS	Global	• To expose the students on the applications of statistical analysis using SPSS
ST6CC12	Statistical Quality Control	National	• To introduce the students the basics of Statistical Quality Control and to enable them describe quality characteristics and relationships.
ST6CC13	Stochastic	Global	• To expose the students to the basics of stochastic



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	Processes	A C	process and to clarify Markov chain, Poisson process and pure birth
ST6CC14	Operations Research	National	• 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	Global	• To enable the students to solve Algebraic, Transcendental, Differential Equations using various Numerical methods like Bisection, Runge- Kutta, Euler and Taylor.
ST6ME4	Regression Analysis	Global	• To expose the students to regression models applicable to real life situation.
ST6ME5	Actuarial Statistics	National	• The Actuarial statistics curriculum aims at providing the academics and professional training



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		A C	to students who wish to join the actuarial profession.
ST6ME6	Industrial Statistics	National	• This course enables the students competent to undertake industrial researches.
ST6SB5	Practical Statistics IV	Global	• To expose the students to the analysis of statistical techniques in real life situations.
ST6SB6	Statistical Software – R	Global	• To expose the students on the applications of statistical analysis using statistical package.



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#### 2017 - 2018

COURSE CODE	Course Title	NATURE OF THE COURSE (LOCAL/NATIONAL/ REGIONAL/GLOBAL)	COURSE OBJECTIVE
ST1CC1	Descriptive Statistics I	National	• 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	Global	• 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	Global	• To enable the students to understand higher derivatives, curvature, singular points, envelopes, asymptotes, reduction formula, multiple integrals and Fourier series in calculus.



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ST2CC3	Descriptive Statistics II	National	• This course imparts the knowledge of correlation, regression and association of attributes to students.
ST2CC4	Distribution Theory I	National	• This course exposes students the various important discrete probability models and real life situations where these distributions provide appropriate models.
ST2AC2	Algebra	National	• 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	National	• This course exposes students the various important discrete probability models and real life situations where these distributions provide appropriate models.



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ST3CC6	Sampling Theory	Global	• 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	National	• 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	Global	• To expose the students the analysis of statistical techniques in real life situations.
ST4CC7	Statistical Inference I	Global	• To enable the students understand the various statistical estimation methods of parameters and its applications in solving real life problems.
ST4CC8	Distribution Theory II	National	• To enable the students understand the continuous probability distribution and real life situations



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		A C	where these distributions provide appropriate models.
ST4AC4	Linear Algebra	National	• 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	Global	• To expose the students analyze the statistical techniques in real life situations.





#### 2016 - 2017

COURSE CODE	Course Title	NATURE OF THE COURSE (LOCAL/NATIONAL/ REGIONAL/GLOBAL)	COURSE OBJECTIVE
ST1CC1	Introduction to Statistics	National	• 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	National	• This course imparts the knowledge of correlation, regression and association of attributes to students.
ST1AC1	Calculus	Global	• 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	Global	• To enable the students understand and appreciate



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			the applications of Statistics
ST2CC4	Probability Theory	Global	• 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	Global	• To enable the students to get thorough knowledge of solving Differential Equations, this is essential for learning higher Mathematics.

