॥ वसुधैव कुटुम्बकम् ॥ SYMBIOSIS	**Symbiosis College of Arts and Commerce** (An Autonomous College Affiliated to University of Pune)														
Subject code	20121C19	Semester	**II**												
Title of Subject	**BUSINESS MATHEMATICS AND STATISTICS-2 (AY 2019-20)**														
Objectives:	1. To understand the concept and applications of Matrices. 2. To solve LPP to maximize the profit and minimize the cost. 3. To minimize the cost of distributing a product from a number of sources or origins to a number of destinations. 4. To use regression analysis to estimate the relationship between to variables. 5. To understand the concept and applications of different types of Index Numbers. 6. To predict the future behaviour of the variable based on past experience, use of least square method. 7. To specify probability in an area of study which involves predicting the relative likely hood of various outcomes.														

Detailed syllabus

Unit	Contents of the syllabus	Number of Lectures
1	**Matrices and Determinants (up to order 3 only)** Multivariable data, Definition of a Matrix, Types of Matrices, Algebra of Matrices, Determinants, Adjoint of a matrix, Inverse of a Matrix using Adjoint. Solution of Non-homogeneous system of Linear Equations (not more than three variables). Condition for existence and uniqueness of solution, Solution using inverse of the coefficient matrix, Problems.	12
2	**Linear Programming Problems (L.P.P.) (for two variables only)** Definition and terms in a L. P. P., Formulation of L.P.P., Solution by Graphical method, Transportation Problems.	12
3	**Correlation and Regression** Concept and types of correlation. Scatter diagram, Interpretation with respect to magnitude and direction of relationship. Karl Pearson's coefficient of correlation for ungrouped data. Spearman's rank correlation coefficient. Concept of linear regression. Lines of regression for ungrouped data, Predictions using lines of regression. Regression coefficients and their properties.	10

Symbiosis College of Arts & Commerce PUNE

4	**Index numbers** Concept and Definition of Index Number, Types of Index Numbers, Uses of Index Numbers, Problems in construction of Index Numbers., Commonly used Index Numbers. Methods of construction of price index number, Laspeyer's Paasce's and Fishers price index number.	4
5	**Time series** Concepts and components of a Time series. Representation of trend by Freehand Curve Method, Estimation of Trend using Moving Average Method and Least Square Method (Linear Trend only). Estimation of Seasonal Component using Simple Arithmetic Mean for Additive Model only (For Trend free data only). Concept of Forecasting using Least Square Method.	8
6	**Probability Distributions** Discrete Probability Distribution: Binomial, Poisson (Properties and applications only, no derivations are expected) Continuous Probability distribution: Normal Distribution. (Properties and applications only, no derivations are expected)	8
	Total Number of Lectures	54

Reference Books:

1) Business Mathematics by Dr. Amarnath Dikshit & Dr. Jitendra Kumar Jain.
2) Operations Research by V. K. Kapoor – Sultan Chand & Sons, Delhi.
3) Business Mathematics by Bari – New Literature Publishing Company, Mumbai.
4) Fundamentals of Statistics by S.C. Gupta - Sultan Chand & sons, Delhi.
5) Fundamentals of Statistics by Goon, Gupta and Dasgupta – The World Press Private Ltd.
6) Statistics by Sancheti and Kapoor - Sultan Chand & Sons, Delhi
7) Operations Research by Schaum Series.

Text Books

1) Text Book for SSPU Syllabus for F.Y.B.Com. Business Mathematics and Statistics
2) Text Book for Mumbai University Syllabus for F.Y.B.Com. Mathematical and Statistical Techniques (Sem I and Sem II)
3) Text Book for XII Standard Board for the subject Mathematics and Statistics.

Assignment (20 Marks)

Students can select any topic related to the syllabus or can do the assignment based on problem solving related to syllabus.