

**Anekant Education Society's  
Tuljaram Chaturchand College of Arts, Science and  
Commerce, Baramati  
Autonomous**

**Course Structure for F. Y. B. Com. Business Statistics (2022 Pattern)**

<b>Semester</b>	<b>Paper Code</b>	<b>Title of Paper</b>	<b>No. of Credits</b>
I	UCBS111(A)	Business Statistics-I	3
II	UCBS121(A)	Business Statistics-II	3

Program Outcomes (POs) for B.Com. Programme

PO1	<b>Knowledge and Critical Thinking :</b> Acquire skills in organising, analysing, evaluating and presenting information. Able to analysis issues logically, consider different options and viewpoints, make decisions and act with flexibility, adaptability and creativity.
PO2	<b>Communication Skill :</b> Able to communicate effectively, analyse the concepts and participate in healthy arguments and portray skill in communication and in writing. Possess skills related with banking and other business.
PO3	<b>Independent learning :</b> Demonstrate the ability to acquire knowledge and business skills, the capacity for self directed activity and the ability to work independently.
PO4	<b>Leadership quality :</b> Exhibit qualities associated with leadership such as accountability, integrity, respect, self reflection
PO5	<b>Teamwork:</b> Able to work constructively, cooperatively, effectively and respectfully as part of a team.

**SYLLABUS (CBCS) FOR F. Y. B. Com. Business Statistics  
(w. e. from June, 2022)**

**(2022 pattern)**

<b>Name of the Programme</b>	: B.Com. Business Statistics
<b>Program Code</b>	: UCBS
<b>Class</b>	: F.Y.B.Com.
<b>Semester</b>	: I
<b>Course Name</b>	: Business Statistics – I
<b>Course Code</b>	: UCBS111(A)
<b>No. of Lectures</b>	: 48
<b>Credit</b>	: 3 credits

**A) Course Objectives:**

Students will be able to

1. develop a strong foundation to analyze and interpret data in various fields.
2. Compute various measures of central tendency and dispersion.
3. Summarize data using frequency distributions and graphical representations.
4. Gain knowledge of different types of data.
5. Develop effective written and oral communication skills to present and explain descriptive statistics results clearly and accurately.

**B) Course Outcomes:**

The students will acquire knowledge about the;

- CO1. the concept of population and sample.
- CO2. draw the descriptive statistics for the data and interpret the data with the appropriate graphs.
- CO3. computation of various measures of central tendency and their applications in real life .
- CO4. computation of various measures of dispersion and their applications in real life.
- CO5. Find the determinant of a product of square matrices, of the transpose of a square matrix, and of the inverse of an invertible matrix
- CO6. Solve the matrix equation  $Ax = b$  using row operations and matrix operations.
- CO7. concept of Matrices and to calculate determinant and inverse of matrix.
- CO8. to obtain optimal sequence of N jobs on two and three machines without passing.
- CO9. develop critical thinking and problem-solving skills by applying descriptive statistics techniques to real-world scenarios and data sets.

## **TOPICS/CONTENTS**

### **UNIT 1: Population and Sample [6L]**

Definition of Statistics, Scope of Statistics in Economics, Management Science and industry. Concept of population and sample with illustration. Methods of sampling— SRSWR, SRSWOR, Stratified, Systematic, (Description of sampling procedures only).

### **UNIT 2: Measures of Central Tendency [12L]**

Frequency distribution: Raw data, attributes and variables, Classification of data, frequency distribution, cumulative frequency distribution, Histogram & ogive curves.

Mean median and mode for ungrouped and grouped data. Geometric mean: definition, merits and demerits. Harmonic mean: definition, merits and demerits. Choice of A.M., G.M. and H.M. Examples and problems.

### **UNIT 3: Measures of Dispersion [12L]**

Concept of dispersion, Measures of dispersion: Range, Variance, Standard deviation (SD) for grouped and ungrouped data, combined SD Measures of relative dispersion: Coefficient of range, coefficient of variation.

### **UNIT 4: Matrices and Determinants (up to order 3 only) [12L]**

Multivariable data, Definition of a Matrix, Types of Matrices, Algebra of Matrices, Determinants, Adjoint of a Matrix, Inverse of a Matrix via adjoint Matrix, Homogeneous System of Linear equations, Condition for Consistency of homogeneous system, Solution of Non-homogeneous System of Linear equations (not more than three variables). Problems.

### **UNIT 5: Sequencing [6L]**

Introduction to Sequencing, Sequencing Problems, Solution to Sequencing Problem - Processing n-jobs through one machine, processing n-jobs through two machines. Example to determine the sequencing and total time required. Also, to find idle time of the machine.

**Note:** 36 Lectures for Direct Teaching and 12 Lectures for Tutorials.

## References:

1. Dr. Amarnath Dikshit & Dr. Jinendra Kumar Jain, Business Mathematics
2. Goon A. M., Gupta, M. K. and Dasgupta, B. (1986): Fundamentals of Statistics, Vol. 2, World Press, Calcutta.
3. Goon, Gupta and Dasgupta, Fundamentals of Statistics, The world press private ltd, Kolkata.
4. Gupta S. C. and Kapoor V. K. (1987): Fundamentals of Applied Statistics, S. Chand and Sons, New Delhi.
5. Gupta S. C. and Kapoor V. K.: Fundamentals of Mathematical Statistic, Sultan Chand and Sons, 23, Daryaganj, New Delhi 110002.
6. Gupta S. P.: Statistical Methods, Sultan Chand and Sons, 23, Daryaganj, New Delhi 110002.
7. Mukhopadhyaya Parimal (1999): Applied Statistics, New Central Book Agency, Pvt. Ltd. Calcutta. 11.
8. S.C. Gupta, Fundamentals of Statistics, Sultan Chand & Sons, Delhi.
9. Sancheti and Kapoor, Statistics, Sultan Chand & Sons, Delhi
10. V. K. Kapoor, Business Mathematics, Sultan Chand & Sons, Delhi.
11. Moore D. S., Norz W. I, Flinger M. A., (2013), The Basic Practice of Statistics, Sixth Edition, Freeman and Company New York
12. Brase C.H. and Brase C. P, (2018), Understandable Statistics, Twelfth Edition, Cengage Learning
13. Biston Feedman D., Pisani R., Purves R. (2007), Statistics, Fourth Edition, W. W. Norton and Company, New York.

Course Outcomes	Programme Outcomes (POs)				
	PO1	PO2	PO3	PO4	PO5
CO1	3	-		-	-
CO2		3		-	-
CO3	3	-		-	-
CO4	3	-		-	-
CO5	2	-		-	-
CO6		2		-	-
CO7		-	3	-	-
CO8		-	2	-	2
CO9		-		2	

Weight:      1 - Partially related      2 - Moderately Related      3 - Strongly related

## **PO1: Knowledge and Critical Thinking**

- CO1 (Population and Sample): 3 - Understanding the concept of population and sample is crucial for critical thinking in research and data analysis. Knowing how to appropriately select samples and generalize findings from populations enhances critical thinking skills.
- CO3 (Measures of Central Tendency): 3 - Calculating and interpreting measures like mean, median, and mode involve critical thinking to understand their applications in real-life scenarios.
- CO4 (Measures of Dispersion): 3 - Interpreting measures of dispersion like variance and standard deviation requires critical thinking to assess the spread of data.
- CO5 (Matrix Operations): 2 - Understanding determinants, transposes, and inverses of matrices involves critical thinking, albeit it might be slightly less directly applicable in all real-life scenarios compared to other COs.

## **PO2: Communication Skill**

- CO2 (Descriptive Statistics & Graphs): 3 - Describing data and interpreting it through appropriate graphs necessitates effective communication of statistical information.
- CO6 (Matrix Equations & Operations): 2 - Explaining solutions to matrix equations and operations requires clear communication of mathematical steps.

## **PO3: Independent Learning**

- CO7 (Matrices, Determinants, Inverses): 3 - Understanding matrices, determinants, and inverses encourages independent learning in mathematical concepts.
- CO8 (Optimal Job Sequencing): 2 - Learning to obtain optimal sequences for job scheduling demands independent problem-solving skills.

## **PO4: Leadership Quality**

- CO9 (Applying Descriptive Stats): 2 - Applying descriptive statistics to real-world scenarios can involve leading a team or guiding decision-making based on data analysis.

## **PO5: Teamwork**

- CO8 (Optimal Job Sequencing): 2 - Solving problems related to job sequencing on machines can often involve teamwork in decision-making for optimal outcomes.