

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

**Course Structure for F. Y. B. Com. STATISTICS  
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>	: II
<b>Course Name</b>	: Business Statistics – II
<b>Course Code</b>	: UCBS121(A)
<b>No. of Lectures</b>	: 48
<b>Credit</b>	: 3 credits

**A) Course Objectives:**

Students will be able to

1. compute moments , various measures of skewness and kurtosis.
2. understand theory of probability and its applications in real life problems.
3. compute and interpret with various types of Index numbers.
4. make aware the students about the applications of various forms of Linear programming problems.

**B) Course Outcomes:**

The students will acquire knowledge about the;

- CO1. understanding of the fundamental concepts of moment..
- CO2. to compute various measures of dispersion, skewness and kurtosis.
- CO3. understand the difference between random and non-random experiments.
- CO4. understand the concepts of sample spaces, events and probability. Random experiment, probability.
- CO5. apply correlation and regression in real life .
- CO6. judge economy with the help of Index numbers.
- CO7. handle problems involving maximizing the profit and minimizing the cost with linear constraints.
- CO8. apply the techniques of LPP to solve real world problems.

## **TOPICS/CONTENTS:**

### **UNIT 1: Moment, Skewness and Kurtosis**

**[10 L]**

Concept of Raw and central moments: Formulae for ungrouped and grouped data (only first four moments), the relation between central and raw moments up to fourth order. (Without proof), Measures of Skewness: Types of skewness, Pearson's and Bowley's coefficient of skewness, Measure of skewness based on moments. Measure of Kurtosis: Types of kurtosis, Measure of kurtosis based on moments.

### **UNIT 2: Sample Space, Events and Probability**

**[12 L]**

Permutations of 'n' dissimilar objects taken 'r' at a time (with or without repetition)  ${}^n P_r = \frac{n!}{(n-r)!}$  (without proof). Combinations of 'r' objects taken from 'n' objects  ${}^n C_r = \frac{n!}{r!(n-r)!}$  (Without proof) problems, Experiments and random experiments. Ideas of deterministic and nondeterministic experiments. Definition of – sample space, discrete sample space, events. Types of events, Union and intersections of two or more events, mutually exclusive events. Complementary event, Exhaustive event. Simple examples, Classical definition of probability, Addition theorem of probability without proof (upto three events are expected). Definition of Conditional probability Definition of independence of two events simple numerical problems.

### **UNIT 3: Correlation and Regression**

**[10L]**

Concept and type 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 regression. Lines of regression for ungrouped data, predictions using lines of regression. Regression coefficients and their properties (without proof).

### **UNIT 4: Index numbers**

**[8L]**

Concept of index number, price index number, price relatives. Problems in construction of index number. Construction of price index number: Weighted index Number, Laspeyre's, Paasche's and Fishers method. Cost of living / consumer price index number: Definition and problems in construction. Methods of construction: Family budget and aggregate expenditure. Inflation Uses of index numbers, commonly used index numbers.

### **UNIT 5: Linear Programming Problems (LPP) (for two variables only)**

**[8L]**

Definition and terms in LPP, formulation of LPP, Solution by Graphical method, problems.

## References:

- 1 Gupta S. C. and Kapoor V. K.: Fundamentals of Mathematical Statistic, Sultan Chand and Sons, 23, Daryaganj, New Delhi 110002.
- 2 Gupta S. P.: Statistical Methods, Sultan Chand and Sons, 23, Daryaganj, New Delhi 110002.
- 3 Mukhopadhyaya Parimal (1999): Applied Statistics, New Central Book Agency, Pvt. Ltd. Calcutta. 11.
- 4 Goon A. M., Gupta, M. K. and Dasgupta, B. (1986): Fundamentals of Statistics, Vol. 2, World Press, Calcutta.
- 5 Gupta S. C. and Kapoor V. K. (1987): Fundamentals of Applied Statistics, S. Chand and Sons, New Delhi.
- 6 Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye: Probability & Statistics for Engineers & Scientists
- 7 Moore D. S., Norz W. I, Flinger M. A., (2013), The Basic Practice of Statistics, Sith Edition, Freeman and Company New York
- 8 Brase C.H. and Brase C. P, (2018), Understandable Statistics, Twelfth Edition, Cengage Learning
- 9 Biston Feedman D., Pisani R., Purves R. (2007), Statistics, Fourth Edition, W. W. Nortan 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		-	2	-	
CO8		-		2	1
CO9				-	-

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

Justification:

### PO1. Knowledge and Critical Thinking

- CO1. Understanding of the fundamental concepts of moment.

Weightage: 3 (Strongly related)

Justification: Understanding moments requires a strong foundation in mathematical concepts and critical thinking skills to apply these concepts in various situations.

- CO2. To compute various measures of dispersion, skewness, and kurtosis.  
Weightage: 3 (Strongly related)  
Justification: Computation of measures of dispersion, skewness, and kurtosis involves both knowledge of statistical concepts and critical thinking to analyze data patterns.
- CO4. Understand the concepts of sample spaces, events, and probability.  
Random experiment, probability.  
Weightage: 3 (Strongly related)  
Justification: Probability involves critical thinking and mathematical understanding, aligning with the broader outcome of knowledge and critical thinking.

### **PO2. Communication Skill**

- CO5. Apply correlation and regression in real life.  
Weightage: 2 (Moderately related)  
Justification: While applying correlation and regression requires communication of findings, it is more focused on statistical analysis than explicit communication skills.
- CO6. Judge the economy with the help of Index numbers.  
Weightage: 2 (Moderately related)  
Justification: Index numbers involve interpretation and communication of economic conditions, contributing to communication skills.

### **PO3. Independent Learning**

- CO3. Understand the difference between random and non-random experiments.  
  
Weightage: 3 (Strongly related)  
Justification: Differentiating between random and non-random experiments requires independent learning and critical analysis of experimental design.
- CO7. Handle problems involving maximizing profit and minimizing cost with linear constraints.  
  
Weightage: 2 (Moderately related)  
Justification: While solving such problems involves independent learning, it is more focused on the application of mathematical techniques than the general skill of independent learning.

### **PO4. Leadership Quality**

- CO8. Apply the techniques of Linear Programming (LPP) to solve real-world problems.  
Weightage: 2 (Moderately related)

Justification: Leadership quality is not explicitly addressed in the context of linear programming, but the application of techniques may involve leadership in decision-making scenarios.

**PO5. Teamwork**

- CO8. Apply the techniques of Linear Programming (LPP) to solve real-world problems.

Weightage: 1 (Partially related)

Justification: Linear programming is more focused on individual problem-solving, and teamwork is not explicitly addressed in this context.